AMERICAN
GAS LIGHT JOURNAL

VOL. CIV., No. 20. NEW YORK, MAY 15, 1916. WHOLE No. 3,036.

Address of Thomas N. McCarter,

President of the Public Service Corporation of New Jersey; upon the Opening of Newark's Public Service Terminal.

On this most auspicious occasion in the organic life of Public Service, I greet you, my fellow workers, one and all, with fraternal regard. To our friends, who, by their presence to-night, attest their interest, I extend a cordial welcome. It is indeed a fortuitous coincidence that we are able to dedicate this remarkable terminal structure upon the eve of the celebration by this great city of the two hundred and fiftieth anniversary of its creation. It is not within the province of this occasion, however, to trace the historical development of the city; the story of Robert Treat, Abram Pierson, Jasper Crane and those other sturdy pioneers will be told upon a day set apart for the purpose. So far as my remarks are of historical import, they will be confined to facts of interest relating to the development of transportation, and the events of the early days of the gas industry and the electrical development of this community.

At this time, however, when everything locally historical is of peculiar interest, I cannot omit a passing reference to the facts relating to the site upon which the terminal building is located. It was the home, for many years, of Elisha Boudinot, the leading citizen of this city in his day and generation. Elias and Elisha Boudinot were two distinguished brothers, the former residing in Elizabethtown, as Elizabeth was then called—the latter in Newark. They were patriots. Elisha, with whom we are concerned, was a judge of the New Jersey Supreme Court and a staunch patriot throughout the Revolutionary War. Prior to 1797 the village was entirely without fire protection. It is true there had been desultory efforts made to awaken the people to a sense of their danger from fire, but nothing substantial had been accomplished when, of a sudden, the Boudinot mansion was totally destroyed. I quote from an old newspaper of the day:

"FIRE!

> "How terrible thou art as master! How generous a servant! On Monday evening last the magnificent dwelling house occupied and the property of Elisha Boudinot, Esq., situated in the centre of this town, was discovered to be on fire about 7 o'clock. The cry was echoed by the affrighted inhabitants (who have not been accustomed to scenes so awful) throughout the town in a few minutes, and not less than five hundred of them were at the scene in from 30 to 40 minutes from its discovery. The want of proper fire implements such as engines, ladders, hooks, buckets, reservoirs for water, were all discovered when it was too late."

The destruction of this house made a profound sensation, and from this event sprang the first association for fire protection, which has ripened and crystalized into the efficient fire department of to-day. The house that was destroyed was a stately mansion and the grounds about it sloped away to the Passaic river. Judge Boudinot rebuilt the house and continued to reside therein. After his death the house was occupied by his son, Major Boudinot. On the twenty-third of September, 1824, General Lafayette visited Newark. Upon arriving in the city he was escorted through an enormous concourse of people to the home of Major Boudinot. People were present from all parts of the State. At the Boudinot home, says Shaw in his "History of Essex and Hudson Counties," "the General was introduced to the judges of the State and Federal Courts, members of the Cincinnati Society, and other persons of distinction. Specially fitted up apartments were provided for the royally-entertained guest in the Boudinot mansion fronting on Military Park. On the latter had been constructed something wondrously picturesque and beautiful, in the shape of a commodious bower, in which the General received large numbers of the townspeople. The base of the bower, which was composed mainly of the choicest flowers, covered an area 35 feet in diameter. There were thirteen arches, one for each of the thirteen original States. The pillars were 15 feet high and sustained a floral dome representing the Western Hemisphere. There was an address by the Honorable Theodore Frelinghuysen, and a grand and imposing military display."

Let us see to it, my comrades of Public Service, that we never permit anything to be there done to sully so exalted a shrine!

Lord Macauley in the famous third chapter of his history of England, in which he braved the reproach of descending beneath the old time dignity of history in order that he might give to Englishmen of the nineteenth century a true picture of the life of their ancestors, makes this observation: "Of all the inventions, the alphabet and the printing press alone excepted, those inventions which abridge distance have done most for the civilization of our species. Every improvement in the means of locomotion benefits mankind morally and intellectually, as well as materially." This, perhaps, accounts for the intense popular interest in the subject, and if the statement is true we should deprecate and deplore a discussion of the problem of transportion—one of the most momentous and difficult we have to deal with in our day—as if it affected only the fortunes of a few corporations that are engaged in the business of carrying passengers for hire.

We can not always notice an important change for the better in a vast system of transportation by comparing its operation from day to day, or even from year to year; but by comparing means of conveyances separated by a decade or a generation, gratifying progress may be clearly seen, and the longer the periods are separated the more distinctly the improvement will appear. I have looked into the local histories of this country in the early days, so far as they relate to means of transportation, and into numerous journals of tourists from Europe who were fond of writing accounts of their tours in America in the olden time, and found but few things more interesting and amusing than the narratives of their travels, often spiced with humor and strangely destitute of complaint. In fact they seem to have enjoyed the lumbering stages and dreadful roads of the good old times.

Knickerbocker, in his veracious history of New Amsterdam, tells us that the easy-going Dutchmen who settled on Manhattan Island two centuries and a half ago, were in the habit, in the summer time, of sitting in the shade of the trees on the Battery or the Bowery, and moving just fast enough to keep out of the sun. From that delightful extreme of locomotion we have gone to another extreme of ceaseless and strenuous activity. It may be interesting to glance for a moment at the conditions with which travelers contended a century and more ago.

In 1704, a Madame Knight, in the course of her travels, made a trip from Boston to New York, "with the postman generally as her guide." The good lady jotted down a faithful chronicle of the incidents of her trip. It appears that she left Boston on the 2nd of

October at 3 P.M., and arrived at New Haven on the 7th, in the afternoon. She rested there until December 7th, and then continued her journey to New York, arriving there on the eighth. The mails were carried between the towns of the colonies at the same rate of speed. Franklin, when he became postmaster-general of the colonies in 1754, gave notice of an improvement in the mail service, stating that letters would be carried between New York and Philadelphia 3 times a week, and that the running time would be 33 hours.

Henry Wansey, who kept a clothing store in Wiltshire, England, made an excursion to this country in the summer of 1794, and on returning home published an account of his trip. On June 4th, he tells us—"I crossed Hudson's River to Paulus Hook (now Jersey City) to take the stage from the other side to Philadelphia. Though only two and a half miles across, we were an hour and a half passing. * * * (Probably he went from the Battery to the foot of the present Montgomery street.) I paid $5, and went in the stage called the Industry. All the way to Newark (9 miles) was a very flat marshy country, intersected with rivers. * * * At two miles we cross a large cedar swamp; at 3 miles we intersect a road leading to Berghen, a Dutch town, half a mile distant on our right; at 5 miles we cross the Hackensack River—here a bridge is going to be built to permit the tedious passage by a boat or scoul; at 6 we cross the Passaik (coachee and all) in a scoul, by means of pulling a rope fastened on the opposite side. We now came to Newark to breakfast, a [pleasant little country town; the church or meeting house an exceeding neat elegant building of stone—(meaning, of course, the old First Church). After our breakfast, which was not a very good one, we set off for Elizabethtown, near which, on the right, is Governor Livingston's handsome house (a homestead still accupied by the Governor's descendant's.)"

The inquisitive traveler then moved on by slow degrees to New Brunswick, where he dined, taking care to note that the accommodations were very bad, the port wine not drinkable, and the maderia so hot and fiery that he was obliged to mix it with water. The veal and mutton, he tells us, were badly dressed, and the garden truck not fit to eat.

From New Brunswick Wansey continued on his trip to Princeton, over roads which he says made the stage lurch so violently that it made him sick. He was much surprised at Princeton in the evening to see fire flies winging their way about the village—harbingers of the electric lights that now assist the professors in enlightening the youth of the college. He was much disturbed, he tells us, by tree toads and bullfrogs.

A study of the improvement of transportation facilities in this country and in this vicinity develops a curious and troublesome fact—the more such facilities are improved the more insistent the demand becomes for still greater improvement. In a word, the demand for better means of passage from place to place increases by efforts to comply with it; and no matter how successful those efforts may be, the demand for still better means becomes constantly louder. Many in this audience may remember those clumsy stages slowly rolling along Broadway on a cobble-stone pavement, and the people seemed to be satisfied—at least were not unhappy. Some thirty or more years ago the stages gave place to horse cars; a few years later cables were installed to drag the cars, and then came the electric road. During the same time numerous other railways, on the surface, above the surface and beneath the surface of Manhattan Island, and under the rivers around the Island, have been constructed, cars have been increased in size, and run rapidly and in trains, but the straphangers increase in number year after year, and are constantly heard from. To keep pace with their demands seems to be beyond the power even of the wonder-working engineers of our time.

The history of transportation in these parts begins, of course, with the stage coach. Newark showed no appreciable signs of growth until the first bridge over the Hackensack, and another, across the Passaic, at what is now Bridge street, were erected. These bridges were opened in 1794. "From the opening of these bridges until the coming of the first railroad, a period of about 40 years, may be termed the era of the stage coach," says Urquhart's "History of Newark." "Between the Hackensack and the Passaic bridges the road was a very rough and crude affair. Stretches of it were washed by the high tide, and it required skillful charioteering on the part of the coach drivers to keep their vehicles right side up"—he is speaking of the old turnpike as it was then, not as it is now, as you may have thought. "Passengers often preferred to walk. Much of the way was through a dense and dark cedar forest, a prime place for highwaymen to ply their trade. So pestiferous did these gentry become that stage hold-ups were by no means uncommon. By 1800 there were several stages that went to New York every morning, except Sunday, and returned in the afternoon. There was a New York-Philadelphia stage passing through Newark and reaching Philadelphia by way of Somerville. About 1810 there were no less than four stage lines between the two large cities. The fastest New York-Newark-Philadelphia stages advertised to make the westbound trip of 96 miles in 19 hours, which meant all night travel. The eastbound journey consumed 20 hours. Short distance or 'local' passengers were usually charged six cents a mile. One could carry fourteen pounds of baggage without charge; four cents a pound was the rate for excess. All stages stopped at Newark, for fresh horses, and to put off, and take on passengers and baggage. They tore rapidly down and up Broad street, their horns, especially that of the mail coach, sounding loudly. The village was always a scene of animation upon the arrival and departure of the coaches."

As time went on, various stage lines ran to other points, as, for instance, Chatham, Stanhope, Newton and Milford, Pennsylvania—Elizabethtown and to Rahway—connecting at different points with other stage lines Says Urquhart's History: "The first manifestation of corporation greed appeared in 1806, when some shrewd citizen, signing himself 'Mechanic,' complained in the newspaper that the stage companies were taking advantage of the improved roadway provided by the turnpike company (of which he was an officer), between Jersey City and the Hackensack. The stage companies had raised their rates, he said, but were contributing nothing to the expense of road building, beyond the sum always charged them. This, says 'Mechanic,' is 'flagrant extortion.' A moderate estimate of the number of passengers, he says, is five passengers each way for each stage. The coach people, while paying 25 cents to the turnpike company for each stage load, where thereafter to ask $1 additional for those 5 passengers. Assuming that each stage travels 300 days a year, it would mean $300 a year more for each stage, and there being 4, the people (meaning the turnpike company, which conducted a public utility) were to be bamboolsed out of $1,200 a year. 'Is money to be extorted in this manner,' exclaims 'Mechanic,' 'from the merchant and mechanic in this town? It is time then for our citizens to awake from their delusion and exert their energies and destroy this extortion.'" All this has a very familiar sound.

Again quoting from Urquhart, to whom I give credit for much of the historical matter in this address: "The coming of railroads sounded the knell for stage coaching days. The stage coaches did not give up easily, but were slowly and surely driven to the wall. By 1840 the stage coach had practically disappeared."

Newark's first railroad, operated by a steam locomotive, was put into commission in December, 1835, only 80 years ago, a short time indeed when we realize what has been accomplished in the interval. For more than 20 years previous to the coming of the first railroad, Fulton steamboats had plied between Paulus Hook (Jersey City) and New York; and John Stevens, of Hoboken, the head of the distinguished Stevens family, of Castle Point, had, in 1811, temporarily operated a steam ferryboat between Hoboken and New York. Says Urquhart's History: "As early as 1798, a steamboat 60 feet long, and equipped with an engine of 20-inch cylinder and 2-foot stroke, and called the 'Polacca,' is believed to have been constructed at Belleville. On October 21st, of that same year, this craft made her trial trip upon the Passaic, but it was not a success. Thus ended her brief history, several years before Robert Fulton's 'Clermont' astounded the dwellers along the Hudson. The inventor and constructor of this half-mythical 'Polacca' is said to have been a man of the name of Roosevelt, but the traditions of Belleville do not give this Roosevelt's christened name or his family connections. The first passenger steamboat to run regularly from Newark to New York was the 'Newark,' in the early 30's.

"The Morris Canal was a powerful factor in promoting Newark's prosperity and in stimulating street and road development. It was at first constructed from the Delaware, near Easton, to the Passaic. It was completed as far as Newark in 1831, and later extended to Jersey City." Whatever may have been its advantages to Newark in the early days, I think I may now safely say that, as a transportation waterway, it has outlived its usefulness. A very distinguised citizen of this city, however, persistently opposed, for many years, the abandonment of this waterway, because it seemed to him, that it would afford a secure berth for maritime commerce and ships of war in times of national stress. I confess that this is a kind of preparedness to which I am not as yet fully educated.

The first street pavement of which there is any record was laid in 1853, in Academy street, from Broad to Plane. Broad street, from Clinton avenue to Clay street, and Market street, were paved the same year or a year later.

As before stated, the first railroad between Newark and Jersey City was operated by steam in 1835. Up to January, 1838, when the Bergen Cut was completed, the cars were drawn over the Bergen hill by horse power. The road was extended to Elizabeth in 1835; to Rahway in 1836, and on January 1st, 1839, it was opened through to Philadelphia. The road originally crossed the Passaic river near the site of the Centre street bridge. The shorter route, by way of the bridge at Commercial Dock, was not projected until 1856. The Morris and Essex Railroad was organized in 1835, and for many years after the opening, its cars were hauled down Broad street, from Division street to the Centre street bridge, by horses. Its Bloomfield branch was opened July 1st, 1856. The charter of the present line of the Delaware, Lackawanna and Western Railroad, from Newark to Hoboken, was obtained in 1860. The Paterson-Newark branch of the Erie Railroad was opened in 1868. The Newark and New York branch of the Central Railroad of New Jersey was opened in 1869. So much for early railroading days.

I now come to the consideration of the early days of local surface transportation, with which we are more immediately concerned. The charter for the first horse car railroad in this community, out of which grew the electric railways, was granted by the Legislature in 1859—57 years ago. Local opposition to its construction and the coming on of the Civil War delayed its completion until 1862. On May 23d, 1862, a trial trip was made over the whole length of the road to Orange. Regular trips were run on June 6th, and on the succeeding Fourth of July the Broad street line, from Market street to Orange street, was operated. Various other charters were granted and lines constructed in rapid succession within and without the city limits, and within a few years the town was, for those days, fairly well served by the various horse car lines.

On June 1st, 1869, an election was held to determine whether or not the people would permit the cars to run on Sunday. The approximate vote was: For Sunday service, 6,500; against, 3,500. The companies of that day, however, were not eager to operate on Sunday, and it required mandatory action by the Common Council to compel them to do so. I, personally, well remember the horse car situation in the 70's and 80's. The red line ran south on Belleville avenue, thence down Broad street and Clinton avenue, terminating at Elizabeth avenue—in those days persons who lived on Clinton Hill went in their own conveyances, or walked home from Elizabeth avenue; the yellow cars ran on Bloomfield avenue, down Broad street and down South Broad street to the terminus; the little red Roseville cars found their way to Roseville or to Littleton avenue, if my memory serves me correctly; and I also recall the old blue South Orange avenue cars and the green Orange cars. The men who built up this system of horse railroads have all long since been gathered to their fathers.

The first electric street railway in New Jersey was run along Scotland street, Orange, from Central avenue to McChesney street, for several months in 1887. It was an overhead trolly, known as the Daft motor type. The first car was publicly operated on Wednesday, April 13th, 1887, by Leo Daft, the inventor. The Daft motor was first operated from Newark to Bloomfield in 1889. It was not successful. Meanwhile, the existing horse railroads had, with the principal exception of the Newark and South Orange Railroad Company, been consolidated into the Essex Passenger Railway Company, a corporation dominated by such prominent citizens as Sylvester S. Battin, Anthony Q. Keasbey and Andrew Lemassena. The Newark and South Orange Railroad Company was owned by a sturdy old German, by the name of John Radel. In the latter part of 1889, Mr. T. C. Barr, of Philadelphia, who had proved his capacity as president of two railroad companies of that city, had his attention directed to the situation of the roads in this vicinity and formed the design of consolidating them all under one management. Enlisting influential friends and co-operating with some of the gentlemen who owned the Essex Passenger Railway Company, he succeeded in the early part of 1890 in organizing the Newark Passenger Railway Company; and, by virtue of consolidation under the laws of the State, this company absorbed the whole of the Essex Passenger Railway system. Electrification followed in short order, the first successful electric operation taking place on Springfield avenue, on October 4th, 1890.

It was in an ordinance passed by the Common Council of the City of Newark, authorizing the change of motive power from horses to electricity, that the city reserved for itself, as payment for the privilege, 5% of the gross receipts derived from passenger traffic in Newark—a reservation which has proven so fortunate for the city.

About the time the Newark Passenger Railway Company was formed, the late Elias S. Ward and Chandler W. and Adrian Riker and others, obtained franchises on Central avenue, Washington, Kinney and other streets, and the construction of the Rapid Transit system soon followed. Later, appeared upon the scene that constructive genius, B. M. Shanley, who associated with himself such important men as A. J. Cassatt, the President of the Pennsylvania Railroad; William L. Elkins and Thomas Dolan, of Philadelphia; Garret A. Hobart, of Paterson; E. F. C. Young, of Jersey City; John F. Dryden and Dr. Leslie D. Ward, of Newark, all of whom are dead. Mr Shanley soon became the commanding figure in the transportation development in all of Northern New Jersey. Under him the properties of the Newark Passenger Railway Company and of the Rapid Transit system, and the transportation properties in Southern Hudson County, were combined into the Consolidated Company, of which Mr. Shanley was president and the directing financial head, while Mr. David Young, of this city was vice-president and general manager. Meanwhile the old Newark and South Orange Railway Company, still a single and outstanding property, had been purchased from Mr. Radel and electrified by the late Elias S. Ward and others. This property was shortly after combined with the Consolidated Traction Company into the North Jersey Street Railway Company.

Mr. Shanley, about the same time, gathered together all the railways in Northern Hudson County and in Passaic County, and consolidated them into the Jersey City, Hoboken and Paterson Railway Company, of which Mr. David Young was president. The organization of the Northern New Jersey railways into the two systems above traced lasted until 1903, the time of the formation of Public Service.

Here, I propose to pause in tracing the railway history and refer, in much shorter compass, to the gas and electric industries in the community. For much that I will have to say of the early history of the gas company, I am indebted to Mr. James P. Dusenberry, whose lifelong service with the gas company terminated as Treasurer of Public Service at the retirement age of that corporation. He is still, however, a director and trusted counselor of all that pertains to the corporation and its interests. Says Mr. Dusenberry:

"The manufacture and distribution of gas was in its infancy when the Newark Gas Light Company was started in 1845. Subscriptions to the stock were in the same category as subscriptions to the Newark Public Library and consindered of civic value only, so that Newark might be placed alongside of other progressive cities. Joseph Battin, of Newark, a promoter, inventor and mechanic, in company with several Philadelphians, was the builder of the plant and, doubtless, had much to do with soliciting subscriptions to the stock, which was $100,000. A number of the prominent people of Newark, including Beach Vanderpool and Marcus L. Ward, were directors of the company. The consumption of gas in 1847, about the first whole year of the business, yielded an income of approximately $7,600. This increased to more than $12,000 the second year and $14,000 the third. The original price of gas was $4.00 per 1,000 cubic feet, in 1851 reduced to $3.50, and in 1859 to $3.00; but in 1864 it was increased to $3.50 per 1,000, because of the Government tax placed upon the company's product. In 1865 it was again increased to $4.00; reduced in 1866 to $3.50; in 1872 to $3.25, with a small discount; in 1884 to $2.00, with a discount; in 1889 it became $1.60, with 10c. discount per 1,000, and in 1893 it was reduced to $1.40. In 1898 it was agreed that at some future date the price should become $1.00 per 1,000 cubic feet." In 1913 the price was reduced to the present figure of 90c. per 1,000 cubic feet. Thus, it appears that from 1865 until 1913, a period of 48 years, the price was gradually reduced from $4.00 to 90c.

About 1873 a rival company, called the Citizens Gas Light Company, was chartered, and proceeded to lay its mains and services parallel with those of the old company, until in 1875 the leaders of the two companies came together and divided the city at the canal bridge—the Citizens Gas Light Company taking the northern section and the Newark Gas Light Company taking the southern section. After this division of the city the two companies worked in harmony. In 1895, through the efforts of Henry C. Kelsey, the two companies were merged into the Newark Gas Company, which continued as the operating company until 1898, when, through the activities of Thomas A. Nevins, of East Orange, James Smith, Jr., B. M. Shanley, John F. Dryden, Uzal H. McCarter, of Newark, and Randal Morgan, of Philadelphia, and others, this company, together with the Montclair Gas and Water Company and certain other concerns, were consolidated into the Newark Consolidated Gas Company, which company was simultaneously leased to the Essex & Hudson

Gas Company, which continued to operate the properties thus acquired by lease until 1903, the time of the formation of Public Service. Similar consolidations had taken place in Hudson County under the guidance of Mr. Shanley and Mr. Morgan, resulting in the consolidation of all the companies in that locality into the Hudson County Gas Company. So much for the early history of the gas industry in this immediate vicinity.

"Soon after the Centennial Exposition in 1876 in Philadelphia, where the possibilities of illumination by electricity generated from dynamo-electric machines were first demonstrated, various people applied themselves to the task of developing reliable and commercially practicable systems of electric lighting. While no single individual or locality can claim the honor of having discovered or perfected the complete system of supply and distribution of electricity as illustrated in the present state of the art, New Jersey may safely be called the home of commercially-supplied electricity, as it was in the territory now supplied by this company that the earliest fundamentals, many of which still govern in the industry, were discovered and started on their way of development and evolution. It should be a matter of pride to us all that the great contributions of Thomas A. Edison and Edward Weston were created in our midst.

The first act of a municipality in this State recognizing the desire of the public to witness practical demonstrations of electric lighting was in the form of a resolution by the Common Council of the City of Newark, approved May 9th, 1881, authorizing a special committee to spend "not exceeding $300 for the purpose of erecting five suitable posts in Military Park, and running a wire upon the same, provided the Weston Electric Lighting Company would burn five lights thereon until twelve o'clock each night for two months without charge for lighting, furnishing attendance, electricity, etc., at their own expense—on consultation with the Committee on Public Grounds."

This experiment being considered sufficiently satisfactory, a company was organized to develop and carry on the business, and incorporated as the Newark Electric Light and Power Company, February 21st, 1882, being the first electric central station company in New Jersey. After numerous expensive and tedious experiments the company felt warranted in soliciting business, and secured its first order from the city of Newark in the form of a resolution approved November 10th, 1884, authorizing the erection of twenty-five lights between Market street station and the Court House on Market Street, and between Central avenue and Lincoln Park, on Broad street, providing, "and that on the lighting of these streets by the electric lights the present lamps (gas) be discontinued during the month of December, 1884."

Up to this time the electricity was furnished from small generators operated from engines in factory buildings, but early in 1885 the construction of the first permanent central power station was undertaken at Nos. 31–33 Mechanic street. On September 16th, 1885, the city made the first regular contract with sliding scale for all-night lighting. In 1887 the business of the company consisted of approximately 240 arc lights, mostly for street lighting, and 365 incandescent lights, all in buildings on Broad and Market streets, within 1,000 feet of the intersection of those streets. The circuits supplying this incandescent lighting were operated from dusk to 10 P.M., which was later changed to all night. The first all-day service was started in the late summer of 1887, with an engine rated at 30 horse power. The first incandescent lighting in a building similar to a private house, was that of the Essex Club, on Park Place. The first motor to develop commercial power from electricity supplied by the company, was at the Holbrook Printing Company, on Mechanic street. The first large installation of incandescent lighting was at Miner's (now the Newark) Theatre, consisting of about 600 16-candle power lamps. A special generator, circuit, etc., were installed exclusively for that purpose. These all started some time in the fall of 1887. The theatre installation was at 110 volts D. C., other incandescent service at this time being at 70 volts D. C.

As a result of very active work by representatives and friends of the company, the electric business grew and showed prospects of permanency for the future. In 1888 a branch business was started in Orange, operating a few arc lamps from a generator in Fairchild's factory. This business was later disposed of to the Messrs. Lindsley, who organized the Essex County Electric Company. Others, not interested in the Newark company, began to realize the prospects of the business, and the first competitor, the Newark Schuyler Electric Light Company, started business, furnishing arc lights only from a plant on Nutria street. In like manner, the Thompson-Houston Electric company was organized in the rear of 110 Market street. Both of these companies, after operating about two years, found the business unprofitable and sold out to the Newark Electric Light and Power Company.

Several other central station companies were organized about this time, but did not actively enter the field. The Central Power Company was organized to do power business exclusively, using the Daft system from a small plant also on Nutria street, but it sold out to the Newark Electric Light and Power Company in 1892. The People's Light and Power Company, one of the concerns not actively started, was taken over by the interests controling the Newark Electric Light and Power Company in the fall of 1895, and with the organization of the Newark company began to solicit business outside of Newark.

In 1899 the United Electric Company of New Jersey was organized to do business over a large territory. It acquired all of the electric properties in Hudson and Essex counties and certain properties in Union and Morris counties. Among the many whose names stand out prominently in the development of the electric business in this community throughout these years are B. M. Shanley, Philip N. Jackson, A. B. Carlton, E. F. C. Young, all of whom are dead, and Dudley Farrand, the present vice-president and general manager of Public Service Electric Company. Meanwhile the gas and electric properties of Passaic county had been consolidated into the Paterson and Passaic Gas and Electric Company; and those of Camden and Trenton into the South Jersey Gas, Electric and Traction Company, in the formation of which Colonel Anthony R. Kuser was the leading spirit. This was the situation in the years just prior to 1903, when Public Service was formed, beginning business on the first day of June of that year. It is, therefore, nearly thirteen years old.

While, of course, in a small way, the electric industry was pushing its way forward in the decade between 1880 and 1890, the great development of that industry for light, power and traction took place between 1890 and 1900. The latter half of that decade was a period of unexampled prosperity the country over, and the people, flushed with commercial and economic success, and inspired by the wonders of the new inventions, entered upon an era of development and of exploitation which, however much it may have been accompanied by evils, has on the whole added greatly to the comfort of living and the convenience of the public. Even the gas business, with its half century of previous life, but theretofore a sleepy kind of business, caught the infection. New uses for gas quickly made their appearance. The Welsbach burner, extending the efficiency of gas as an illuminant and cheapening its use, helped it to compete with electric light. New and vigorous methods were adopted by all the companies, enormous sums were spent in extending and developing the plants, the public pulse responded, and the output multiplied by leaps and bounds.

This was the picture at the close of the decade ending with 1900. But another century was dawning, and in the early years of its first decade it became apparent that all that glittered was not gold; that the laying down of steel rails under legislative authority upon public highway was not of necessity immediately followed by fabulous wealth to the owners of those rails; in short, that the inexorable laws of trade applied to the new business in much the same way as to any other commercial pursult.

About 1903 the larger street railway systems of the State were financially embarrassed, and some plan of reorganization was imperative. The electric properties of the State were in a fair financial condition, some were sound and some were not. The gas properties were sound, but had very largely exhausted their capacity for new capital. As the enormous expenditures for the develment of the business had practically exhausted their bond issues, a very serious question was presented as to their future financing. At this juncture Public Service was formed with $10,000,000 of full paid cash capital, to take over and acquire these various properties, by lease or otherwise, to resuscitate the delapidated railroads, to build up the electric properties, and to provide the necessary additional capital for the gas companies. To-day the cash capital of the Public Service is $25,000,000; and it has expended upon the properties acquired upwards of $75,000,000 in 13 years, and from the time of its interception to date there has not been a drop of water in the entire enterprise.

During the intervening years, some properties other than those at first acquired have been taken over, and the scheme of organization perfected, so that now the entire railway system is either merged into or leased to Public Service Railway Company; the gas properties have been merged into or leased to Public Service Gas Company, and the electric properties have been merged into or leased to Public Service Electric Company—the entire capital stock of the three operating companies, with inconsequential exceptions, being owned by Public Service Corporation, the parent holding

company. These companies, together, serve a population of more than 2,000,000 people and operate in upwards of 200 municipalities. With the exception of the properties on the Atlantic seaboard, the gas property in and about Elizabeth, the local street railway in Trenton, and another railway company operating chiefly in Morris County, they include all the important gas, electric and railway utilities within the State.

The total business of the corporation for the year 1915 amounted to approximately $37,500,000; having far more than doubled during the period of the corporation's history, as has the business of its subsidiaries; and this despite enormous reduction both in gas and electric rates, and substantial extensions in the railway fare zones during the period.

The great Public Service organization, of which I am proud to be the head, has been organized and developed to a point of marvelous efficiency and loyalty. Of the latter quality we have just had a most striking illustration in the attitude of the trainmen of the railway company in resenting and repelling the attempt by foreign labor agitators to create trouble. During the years embraced within the life of the corporation, the country may be said to have passed through an economic revolution, one effect of which was to curtail the corporation's prosperity it its earlier history, but it would not down; it has lived through it all; it has, within the bounds of propriety, come into its own, and, as long as property rights exist in this commonwealth, it is beyond the power of destruction.

The railway property has been greatly extended and its facilities increased. What was formerly a local service with incidental suburban facilities, has developed into a State-wide interurban system. As, however, the development of this great city and of this system went along, a serious condition of congestion of cars in the rush hours, at the corner of Broad and Market streets, arose, which increased as the years went on. Such a menace did it become that it not only resulted in vexatious delays to the homeward-bound public, but also threatened to prevent further growth and development. This situation has, of course, arisen in other cities and has been solved in some of them, but in many it has not been solved at all. I venture to say that it existed, to such a marked extent, in no other city of similar size to Newark. This new terminal, erected at a cost of nearly $6,000,000, is the railway company's answer to the problem.

The company has already, with the co-operation of the local authorities, ameliorated to some extent the congestion difficulty, by re-routing cars in the centre of the city, over tracks specially constructed for that purpose, but this relief was, of course, only temporary. The terminal, we think, solves the problem for a generation to come. At all events, it will admit of placing double the number of cars upon the streets of the city during the rush hours without causing further congestion than existed before the additional tracks, to which I have referred, were installed. Furthermore, it will provide an adequate home office for the corporation and its three operating subsidiaries. I think I may say, without fear of over-statement, that it is the most advanced facility for the relief of congestion caused by surface railway traffic that has yet been devised. From it cars will radiate on frequent headway to practically all of the cities of the State within 50 miles.

Without extending this address beyond reasonable limits, I cannot recount in detail what has been accomplished by Public Service. It is sufficient to say that, by additions to gas works, by the construction of modern generating stations and sub-stations, and by the complete rebuilding of a dilapidated and antiquated railway system, we stand prepared to give the people of New Jersey the service in these three great public utilities to which they are entitled, in an efficient manner and at reasonable rates. We recognize that this great State is highly favored in the richness of its soil, in the variety of its manufactured products, and in its physical proximity to the metropolis of the country, as well as to the city of Philadelphia. We know that our work is not completed; that much remains for us yet to do, not only that we may keep pace with but that we may lead in the development of this old commonwealth. We will not be found wanting. We here and now resolve that in this work we will do our part and more than our part. We believe that this beautiful new home, which we now consecrate to the perpetual service of the public, will the better enable us to do our duty. May the God of Robert Treat, of Elisha Boudinot, of us all, shower His blessings upon this noble structure and the work it is designed to perform!

Financing Public Utilities Under State Control: and Service Rate and Rate of Return.

By Chester P. Wilson.

At the present time there are Public Service Commissions in forty-eight States and Territories in the United States, although in some instances gas utilities are omitted from the Commission's jurisdiction. On May 1st, 1913, the Public Service Commission of Indiana assumed regulatory authority and powers over the public utilities, including gas utilities, of which there were forty-nine artificial and nineteen natural properties operating in the State. The fact that there has been no increase to date in the number of these properties probably results from the fact that there are no more communities of sufficient size to warrant the installation of a gas utility.

Assuming that a community of sufficient population should be interested in the establishment of a gas utility in its location, the arrangement for the necessary capital would depend, first, upon the amount required; second, upon the operating statement that could be fairly estimated for the supposed plant. This raises at once the question of rates, and the rate of return on the capital invested. Our Public Utility Commission Law is based on the proposition that a fair rate of return may be earned on a fair valuation of the property used and useful for the convenience of the public, so that the valuation is as important as the percentage adopted as the rate of return.

The question of valuation has received a great deal of attention, both from the owners and operators of utilities and their National and State Associations, and there has been a great mass of literature written upon the subject. As a rule, where valuations have been made in connection with cases before the Commissions, there has been little difficulty over the value of the physical property, although many of the values set have been too low, by reason of the fact that the history of the property has not been taken into account, either because it was forgotten or because of the unwillingness of the Commission's valuators to consider it. Assume that ten years from now, a valuation were to be made of a gas utility constructed during the year 1916, and that the property at that time be not in the hands of its original owners and that no one with knowledge of 1916 construction conditions was in charge of the property. If the price of pipe, steel and other construction meterial be greatly reduced in 1926 from what they are to-day, it is quite probable that the valuation of that gas utility would suffer.

That part of the valuation, however, concerning which at all times there is the most dispute, is represented by what are known as "overhead" and intangibles, including going value, etc. If rates for service and the valuation of intangibles is to depend solely upon the valuation of physical property, inconsistencies will arise. We can assume two properties of similar standards of construction and similar cost, located in towns of similar population, where the use of gas at identical rates is 25% greater in one town than in the other. If these two plants were offered for sale, there is no question but that the more valuable property to the intending purchaser would be the one with the greater earning power. Therefore, earning power is an element in valuation which should be considered.

None of the Commissions have adopted a standard percentage rate of return, and within the brief history of our own Commission, which is typical of that of other Commissions, we find a variation in these rates, which I am led to believe results from considerations other than those I have mentioned thus far. For instance, in the Richmond water case, our Commission allotted a rate of return of but 6%, and I have understood that this low rate of return was adopted because the books of the company showed that a large part of the property had been built out of earnings. However, 7% is the usual rate thus far allowed by Commissions.

When arguments are presented asking for a greater rate of return, one of the most frequent answers is that the operating com-

pany is endeavoring to pay a return on securities in excess of the valuation. Let us admit, for purpose of argument, that in the past companies have—

(1) Failed to care for depreciation until renewals were forced upon them, and that the cost of the renewals was charged to capital account.

(2) Issued securities, stocks or bonds or both, to cover promotion profits; and

(3) Added to their capitalization at times of purchase and sale, this based upon earning power.

The proportionate amount by which capitalization may have been improperly increased for gas companies by taking care of depreciation is probable small. The promotor is justly entitled to fair compensation for his work, and a fair compensation for him is greater than should be paid other lines of endeavor, because of the risk he takes. Some commissions admit this principle, and have indicated a willingness to allow promoters 12½ to 15% of the cost of the property, for which stock, or even bonds might be issued. The addition of capital issues at times of purchase and sale is a recognition of the element of earning power, which I contend should be recognized, but in proper degree.

We all know of properties, in existence for years, that are confronted with problems resulting from what is popularly termed over-capitalization. We all know of properties where the entire cost of renewals has been taken care of by additional capitalization instead of wholly or partially through depreciation. Such situations have sometimes resulted through ignorance, sometimes through a failure to forecast the future, and when these properties come to be operated under the control and regulation of commissions the problem of squaring the outstanding capitalization with the conditions imposed by commission laws is a serious one. But leaving this phase of the matter out of consideration, it has also seemed to me that any man or set of men, intelligent, courageous and able enough to create or acquire and operate properties of this character, are sufficiently able to invest their money in reasonably liquid and sound securities that would pay a return of 6% or 7% without having to perform the onerous duties that devolve on the owners of such properties or carry the risk incident to the business. In competitive lines of business, which thus far have not been regulated by the State, rates of return of 25% or more in prosperous years have been earned; and while the average rate of return is undoubtedly less than this, it unquestionably remains considerably higher than the usual 7% permitted utilities by commissions.

Of the enterprises that our Utility Commissions Law defines as utilities, the ones involving greatest risk are interurban and steam railways; next, if any lower in degree of risk, are street railways; lower still, perhaps, are electric lighting properties, particularly where overhead distribution systems are employed, and telephone and telegraph companies; and next come, gas, and water utilities. The development of electric light and power properties gives our gas properties ever increasing competition. At first it was in the field of illumination. Now with intensive development and the progress of the art, they are seriously competing with gas for heating and cooking. While in most instances there is but one gas utility in a community, it is rare that it is not in competition with electric light and power properties. The theory of Public Utility Commisson laws is that a utility, each in its own class, shall be a regulated monopoly—a monopoly so far as its particular community and class of service is concerned. But as gas is one means of accomplishing certain results, and electricity another means of accomplishing many of the same results, gas properties are to a certain extent under competition in spite of this provision of the Utility Commission laws.

Assume that it be decided to construct a gas property in a new and non-competitive field, and that the cost, including a reasonable promoter's profit, is capitalized in stocks and bonds issued under Commission regulation. Under present conditions the money cannot be obtained for less than 7% to 8%. As to what may be the rate for money after the termination of the European war, one cannot predict except with accidental accuracy, but it seems fair to assume that for many years to come it will hardly be less than 8%. While the general laws of the State give the bondholder a lien on the property prior to that of the stockholder, it is the duty of the Public Utility Commission to protect the rate of return to the stockholder as well as to the bondholder. The investment banker protects the bondholder by refusing to buy the bonds unless the net earnings from operation bid fair to be as much as one and one-half times the bond interest. The Commission should protect the stockholder to the extent of making it possible for his dividends likewise to be earned with a reasonable surplus. To earn bond interest and dividends with a reasonable surplus would require a rate of return from 8% to 10% varying inversely with the size of the property.

While it is true that in some States utility construction has almost ceased under Commission regulation, it is also true that in those States where the regulation has been fairly uniform in character and has extended over a period of years, utility securities command a better price than those of utilities that have not been subject to such regulation. This does not mean, however, that those securities that command such higher prices for this reason are considered attractive investments by the public.

The fair rate of return cannot be determined wholly mathematically. The valuation on which it is based should give a fair value of the physical property, taking into account the history of the property and including a fair allowance for intangibles, in connection with a fair allowance for promoter's profits and the earning power of the property. The history of general business conditions in the locality served also should be taken into account. Consideration should also be given as to whether the utility has a permanent monopoly, or is or may be subject to competition. And it must be borne in mind that gas utilities, as well as other classes of utilities, may have to face a downward fluctuation in earnings, and proper allowance should be made for this in fixing the rate of return.

In view of the forgoing, it is my belief that the rate of return for gas utilities should be from 8% to 10%, based upon a valuation made as above outlined, and varying inversely with the size of the property.—*Paper read before the Indiana Gas Asssociation.*

The Philadelphia Gas Works Lease.

The financial conditions of the municipality of Philadelphia are such that financiers are once more discussing the wisdom of an extention of the gas lease. The need of large sums of money to complete improvements projected; the desire to avoid an increase of the tax rate; the wish of the consumers of gas for a price as low as in other large cities; the wish of the United Gas Improvement Company to obtain an extension of the gas lease upon satisfactory terms so that it can make a reduction in the rate which will increase the consumption of gas for fuel purposes, all tend to make the question of an extension of the gas lease a live issue at this time.

The lease of the municipal gas plant to the United Gas Improvement Company expires on December 31, 1927, and by that time the gas company will have retired all of the bonds and preferred stock of the Equitable Gas Company, the subsidiary organized to operate the plant.

After 1927 all the profits arising from the operation of the Philadelphia works will accrue to the United Gas Improvement Company if the lease is renewed. The lessee could therefore afford to make a liberal offer for an extension. In off-hand discussion persons interested in the company have talked about a consideration of $25,000,000 in cash to the city for an extension of 75 years.

Under the present lease the net price of gas to the company will be 80 cents per 1,000 until December, 1917, and from then until the expiration of the lease, the rate is to be 75 cents. All consumers pay $1 per 1,000, and the difference between the price retained by the gas company and the dollar collected, goes into the city treasury. The only reason for not providing gas to consumers at the rate allowed the gas company, is that the city needs the profit of 25% it exacts from the users of gas.

If, by an extension of the lease, terms could be made so favorable to the city as to permit the sale of gas to consumers at the minimum prices named in the lease, all consumers would de directly benefited.

Last year sales to consumers in Philadelphia were 9,742,152,370 cubic feet, from which the company derived a revenue of $7,793,721, and the city's portion was $1,948,430.

MOVEMENT TO REPEAL NORTH DAKOTA UTILITIES LAW.—Maintaining that the public utilities law passed by the last Legislature, under which the power of fixing rates of water, gas and electric companies is taken from the city governments, is unfair in that it provides no remedy for the public in the event that it is dissatisfied with a rate fixed by the commission, an effort will be made to bring about the repeal of the measure at the next session of the State Legislature.

Co-Operative Advertising.

By W. B. CONANT.

THE BOSTON JOURNAL—WEDNESDAY, MAY 3, 1916. 5

The Semi-Indirect Light

A light especially adapted for general illumination in living and dining rooms. Part of the light is reflected from the ceiling and part is transmitted through the shaded globe. The burner is entirely concealed. The result is a very even distribution of light.

The New C. E-Z Light

The three small mantles are put on "safe"—can be installed on gas or gas and electric fixtures as usually found, thus utilizing the present globes. The light produced is very pleasing and restful to the eyes and may be easily turned on and off by the pull-chain pilot self-lighting device.

Some examples of fixture designs. Our Appliance Stores have many varieties, which we invite you to inspect.

The Gas Log enables you to enjoy the full advantages of the open fireplace. Heat may be obtained and discontinued at will, while a wood fire, because of its dirt and inconvenience, is often not used, especially when heat is desired for only a short time.

The Supremacy of Gas Service

The Gas Companies listed below are joining in a series of advertisements for the purpose of bringing to the attention of their customers and prospective customers, the *Supremacy of Gas Service*.

We all believe that if the advantages of gas are only realized by *all* persons, as they are now by *many*, not only will the use and sale of gas be increased, but something will be added to the joy of living.

We know that gas in itself is of no value to our customers except as it may be made useful through some medium such as a Burner, a Range, a Water Heater, or some other appliance.

We also know that the gas business is not really a monopoly in the sense usually conveyed by that term. We know that cooking can be done by coal; we know that lighting can be supplied by oil and electricity; and we know that heat can be produced by other fuels.

We know that we cannot expect you to use gas for these purposes just because there is only one Gas Company in your city; but rather that we must, like any other merchant, convince you that our product is the best to use to secure the desired results.

Consequently, it is our purpose to explain to you the use, and to suggest the purchase, of such gas appliances as will meet your need.

In this connection we desire to remind you that the Appliance Stores conducted in connection with the Gas Companies listed below are headquarters for the best appliances for the use of gas, and to urge that if any information is desired regarding gas appliances, the managers of these stores be consulted.

Our aim is to provide the most satisfactory and efficient service possible. We realize that the good opinion of our customers is our most valuable asset, but we also realize that this good will must be deserved before it can be won. We therefore earnestly request that you advise us if there is any fault in our service so that we may hasten to correct it.

Each of the Companies below maintains a personal service bureau, a corps of men who will go to your home, analyze your lighting and heating problems, show you how to save money cooking with gas, demonstrate the numerous labor and money-saving devices, teach you how to get maximum gas efficiency. All the expert knowledge which we possess about how to use gas economically is at your command. This service is free. It is yours for the asking.

Other Features of Gas Service

GAS COOKING

Cleaner, more convenient and more economical, and gives better results than any other method.

GAS LIGHTING

Gas is scientifically adapted to produce a satisfactory illuminant without harshness or glare.

GAS WATER HEATING

Provides instant hot water at any time of the day or night without dust or dirt or trouble.

GAS FOR MISCELLANEOUS USE IN THE HOME

Clothes Dryers, Garage Heaters, Gas Irons, Gas Mangles, Laundry Iron Heaters, Warming Ovens in the Pantry, Garbage Incinerators, Toasters, Nursery Burners, etc.

Send for a representative to make a special report upon your conditions and advise you what is the best appliance for you to use for the particular result desired.

Arlington Gas Light Company
Boston Consolidated Gas Company
Cambridge Gas Light Company
Charlestown Gas & Electric Co.
Citizens Gas Light Co. of Quincy
Dedham & Hyde Park Gas & Elec. Light Co.
East Boston Gas Company
Fall River Gas Works Company
Lowell Gas Light Company
Lynn Gas & Electric Company
Newton & Watertown Gas Light Company

The All-Gas Kitchen

THE GAS RANGE
Compact, convenient, economical

THE GAS WATER HEATER
Instant hot water, day or night.

THE GAS STEAM RADIATOR
To heat kitchen if not otherwise heated.

THE GAS IRON
Self-heated to maintain an even temperature all the time.

The Tank Heater, attached to ordinary house boiler, heats the water from the top, so that a small supply of hot water is secured quickly.

The Automatic Instantaneous Heater heats the water instantly, upon the opening of any hot water faucet in the house, and the supply continues unlimited.

The Gas Steam Radiator gives steam heat with Gas for fuel. The heater is self-regulating to the lowest possible gas consumption, and combines with this advantage, freedom from dirt, ashes and odor.

The "Hotspot" reflector heater radiates heat low in the room, where it is most needed, and thence rises naturally, warming the rest of the room.

There Are a Thousand Uses for Gas

The Clothes Dryer, shown above, will be found very convenient where the facilities for outdoor drying are inadequate or where it is desirable to have the clothes dried on schedule independent of the outside weather conditions.

Another very satisfactory appliance is the Garage Heater for private garages—safe and not expensive to operate.

We also recommend the Gas Iron for use in the laundry. It has a self-contained burner, which keeps the iron continuously heated to an even temperature.

Other domestic uses are: Gas Mangles, Special Laundry Iron Heaters and Stoves, Warm Boxes, Warming Ovens, Garbage Incinerators, Toasters, Nursery Burners.

Gas companies in Eastern Massachusetts are co-operating in a campaign of publicity to bring the uses of gas for Lighting, Cooking and Heating purposes before their constituencies. On May 3d an entire page of the *Boston Journal*, and in some other papers, was devoted to this joint advertisement describing the conveniences and economics of gas for all domestic uses. Each of the eleven companies signing the ad.—those of Boston, Arlington, Cambridge, Charlestown, Quincy, Dedham, Hyde Park and East Boston, Lowell, Lynn, Fall River, Newton and Watertown—maintains a personal service bureau to analyze the lighting and heating problems of prospective customers, and advise them. This unwonted activity is in the nature of a foil to the efforts of the electric companies to build up a cooking load.

AMERICAN
GAS LIGHT JOURNAL

SANFORD K. CAMPBELL, Editor.

Published Weekly by
AMERICAN GAS LIGHT JOURNAL, INC.
42 Pine Street, New York, N. Y.

ELBERT P. CALLENDER, Pres. and Treas.
FREDERICK A. SOUTHWORTH, Vice-Pres.
CHARLES H. WADELTON, Secretary and Manager.

Subscription, $3.00 per year, including postage in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines.
In Canada, $4.00. Foreign, $5.00.

Entered at the Post Office, New York City, as Second-Class Matter.

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Dr. Humphreys on Commission Practice.

At a joint meeting of the Boston Society of Civil Engineers and the American Institute of Electrical Engineers, Dr. Alexander C. Humphreys declared that public utilities in many states are suffering from over-regulation; and that in numerous instances a fair presentation of the case is not allowed by the investigating tribunal.

While quasi-public corporations should be required to submit to regulation and governmental authority, this regulation should not deprive officers of corporations of the opportunities to use their initiative in the interests of the investors and of the public served. It is not improbable that the country has suffered as much from the ill-directed zeal of honest but self-sufficient enthusiasts, as from the cunningly directed activities of selfish reformers. Dr. Humphreys spoke of the tendency toward excessive legislation, and condemned the practice of many legislative committees in preventing the development of a complete record during their examination of witnesses. Vigorous criticism of the biased "investigations" of the Federal Industrial Commission was advanced.

He held that two fundamental conditions should limit public utility regulation: First, the initiative of the corporations must not be destroyed; and second, the commission should not be allowed to exercise all three functions of government—legislative, executive and judicial. Under commission control, over-regulation and unnecessary interference with individual enterprise is gaining headway. The tendency of both Federal and States commissions is to get deeper and deeper into the details of management, to become more and more active in legislation and the framing of major and even minor rules, and to be more and more keen to sit as judges in trials of public service corporations. Commissions more and more concern themselves with and exercise authority in the details of design, construction, production, management, administration and financial policy. Thus they exercise authority while avoiding responsibility for final results—a most inefficient and dangerous system.

In State commission hearings it is not infrequent for the presiding commissioner to examine witnesses in a way indicating bias.

"Witnesses are so examined as to cloud and confuse rather than to clarify the record," said Dr. Humphreys. "The commissioner presiding should so examine witnesses as to make clear that which was obscure. Especially in the case of stupid or timid witnesses, he should consider it a privilege to develop the truth, the whole truth and nothing but the truth. While incompetent witnesses should be assisted, the tricky witness should be relentlessly cross-examined." He cited cases of abuse of powers by commissioners in examining witnesses, and said that "many cases which should be carried to the courts because of such abuses are not appealed for reasons of policy, or lack of backbone. By experience, I am convinced that the corporations have suffered material loss, and loss of prestige by this cowardly course. Unless corporations fight for their just due, they are charged with being found in the wrong. They should be very sure they are right and then fight to the limit. While, of course, I have been concerned in cases before commissions where hearings were conducted fairly and decently, I am obliged to say that these cases have not been in the majority."

He believes many minor troubles and injustices could be eliminated from commission control if qualified engineers were put on the Boards. Every commission should include at least one qualfied engineer as a member The people, through their representatives, should direct only as to principles and larger policies; the individual must be free to work out his own salvation with respect to things less essential. Privately owned and conducted enterprises cannot live under the burdens of political favoritism and interference, which so hamper the progress and development of government owned enterprises.

Empire State Meeting at Buffalo.

The mid-year meeting of the Empire State Gas and Electric Association was held in the Iroquois Hotel, Buffalo, N. Y., May 4th and 5th. Mr. J. C. DeLong, the President of the Association, presided at the sessions, and there were about 60 delegates in attendance.

At the meeting on Thursday morning H. M. Beugler, Chairman of the Committee on Railroad Crossings, submitted a preliminary report containing a memorandum by counsel, in which reference was made to many legal decisions. The Commercial Committee, of which A. D. Dudley is chairman, reported on a sample form of application card, showing the card on the screen. Considerable discussion developed as to how much in the way of company rules and regulations it was necessary to print on the application form, the consensus of opinion appearing to be that very little was necessary if proper reference were made to the schedule of rates on file with the Commission.

The papers presented the first day were:

"Personal Work in a Community by Officers and Employees of the Lighting Company," by H. L. Coleman.

"Giving Out News Stories to Newspapers," by T. H. Yawger.

"The Use of Charts and Curves for Publicity Purposes," by E. F. Tweedy.

"Company Bulletins," by C. G. M. Thomas.

An interesting discussion of the papers followed their reading.

The delegates dined together informally that evening at the Iroquois Hotel, the dinner being followed by a cabaret show and singing of popular songs.

Friday's session was opened by a paper M. O. Dellplain on "Department Store and Hotel Electric Business," followed by a very complete discussion of the "Prepayment Meter Situation," by G. H. Smith.

After luncheon, L. E. Cass, Manger of the Coke Department of the Mohawk Gas Co., presented a paper on "Marketing Coke;" and E. C. Peebles a paper on "The Domestic Consumer." All the papers brought out valuable discussions.

Many of the delegates availed themselves of the opportunity of visiting the offices and show-rooms of the Buffalo General Electric Company, the Iroqois Natural Gas Company and the Robertson Cataract Electric Company, and found much to interest them.

May Meeting, New York Section, I. E. S.

Attendance records were again smashed at the May meeting of the New York Section of the Illuminating Engineering Society, held on Thursday last, at the Engineering Societies' building.

Chairman D. M. Moore addressed over 200 members and guests, when he opened the meeting, introducing Mr. S. de Kosenko, of the Sterling Bronze Company, who handled his subject, "Fixture Design," in a unique and interesting way. He traced the history of lighting fixtures from the dark ages up to the present, and delighted his hearers with his charcoal sketches, made to illustrate his points. Beginning with the metal and clay holders for slivers of wood, and then on through the oil and candle periods, the reasons for many of the designs of to-day were made apparent. His remarks on more recent efforts were of the critical order, but justifiable, to judge from the attitude of the audience. The heavy metal chains, buttressed glass bowls and other anachornisms were roughly handled. The major fault in public structures are too much light, badly directed light and glare. Church lighting suffers from being too spectacular. Picture galleries are not constructed so that they can be properly lighted. The qualifications of a fixture designer, as he outlined them, were so exacting that even an artist-architect need not be better equipped.

The second paper of the evening covered Lighting Glassware, and was presented by Mr. A. D. Nash of the Tiffany Furnaces. He outlined the field of the manufacturer, and made a plea for a better general understanding as to the character of the product offered in competition. This referred more particularly to the Alabaster and Opal types and to the soda and potash groups. The glassware represents only about 20% of the cost of a fixture installation, but is the most important feature of the whole installation. The production of daylight illumination is a function of the lamp manufacturer, and not that of the glass man. The so-called Daylight Glassware does not come anywhere near providing that condition. Mr. Nash heartily agreed with the previous speaker that buildings must be perfectly designed before they could be perfectly lighted.

The discussion by Messrs. Basset Jones, Norman Macbeth and A. A. Wohlauer had principally to do with daylight effects, and paints for wall surfaces. The possibilities in the treatment of walls are greater than generally understood, as two surfaces of apparently the same whiteness may show a difference of 25% in reflecting values.

A number of specimens of glassware were exhibited, and unusual slides of fixture designs.

Mr. P. S. Millar outlined the course of lectures to be given in Philadelphia, September 21 to 28, and stated that the price of the ticket, $25, would include bound volumes of the forthcoming lectures and also those delivered in the Johns Hopkins Course in 1910.

Philadelphia Gas Works Section, N. C. G. A.

The April meeting of the Philadelphia Gas Works Section of the National Commercial Gas Association was held in the U. G. I. Auditorium, at 13th and Cherry streets, Philadelphia, with about three hundred members present. Mr. C. Willing Hare opened the meeting with an address on "Preparedness in our Commercial and National Life," in his interesting style; presenting figures to show how utterly unprepared this country is, for any emergency in case war was declared.

Mr. H. S. Christman gave a talk on business conditions in 1916 as compared with 1915, and plans for increasing sales in 1916.

Fifteen minutes talks on the subjects shown below were given, after which they were open for discussion:

How to Increase our Gas Sales and Give Better Service through: "The Use of the Gas Range," by John R. Hare; "Our Instruction Force," by Mrs. L. M. Ludlum; "The sale of Water Heaters and Their Connections," by J. Calhoun Smith; "Creation of All-Gas Kitchens," by W. G. Murfit; "Sale and Installation of Gas Arcs," by Aaron Senator.

At this meeting Mr. C. Willing Hare presented his prize cup to the Spring Garden District Basket Ball Team, for winning the championship of the Philadelphia Gas Works Section League.

Illinois Gas Association Committees.

At a meeting of the Board of Directors of the Illinois Gas Association the following committees were appointed for the current year:

Public Relations Committee—C. W. Bradley, chairman; John Williamson, Frank J. Baker, Carroll Miller, R. S. Wallace.

Technical Committee—E. D. V. Dickey, chairman; C. A. Schnerr, C. C. Boardman.

Nominating Committee—R. B. Harper, chairman; M. L. Harry, C. H. Quackenbush.

Entertainment Committee—George Hohmann, chairman; A. H. Thorn, George R. Jones.

Affiliation Committee—E. W. Smith, chairman; H. S. Whipple, H. H. Clark.

Gas Engineering Committee—F. W. Bedard, chairman; G. H. Lukes, H. H. Clark.

Bureau of Mines Committee—E. H. Taylor, chairman; F. E. Luther, Carroll Miller, E. D. V. Dickey, F. W. Bedard, H. O. Channon, E. W. Smith, R. S. Wallace, H. H. Clark.

Affiliation Representative, American Gas Institute—George F. Goodnow.

The Annual Convention will be held in Chicago, March 21st and and 22d, 1917.

Stores Accounting.

From paper by W. A. SAUER, to the Illinois Gas Association.

"Accounting," to quote an authority, "is essentially a militant science. If it remains passive it must die. To live, it must war incessantly against carelessness, ignorance, inefficiency, evil disposed cleverness, and possibly against dishonesty." This definition applies particularly to "Stores Accounting," which covers the systematizing and recording of the receiving and distribution of material and supplies to and from the storeroom.

Stores accounting has been touched on but lightly, considering the hundreds of papers written on almost every other phase of accounting, organization and management. It might seem that the topic was unimportant, merely covering a minor routine that could be adjusted or corrected without much time or thought.

If those interested in this subject would take the time to investigate the stores accounting system of some of the big railroads, steel companies or manufacturers they would learn that these corporations insist that the routine governing the receiving and distributing of material and supplies be strictly adhered to, and that this accounting is considered as necessary to the operation of the business as it is to see that the cash on hand is properly balanced. Stores mean cash or its equivalent, and that equivalent is harder to account for than cash itself.

There is no accepted standard to follow in building up a system for properly distributing and recording the diversified stocks required to operate a gas company. The majority of companies charge purchases to stock, credit to stock what is taken out, and at the close of the fiscal year, or after an inventory has been taken, adjust the differences in various ways, whether great or small. This procedure does not encourage economy, and can not even be explained on the ground of carelessness. It is due to lack of a little mental effort, for it is a problem in efficiency that can be solved. Whether a company is large or small, a stock or any number of stocks can be accounted for so that differences will be reduced to a minimum at little if any additional expense.

The stores method used by the gas company of Chicago is the result of a great deal of study and persevering effort. It required insistance that the stockman do some clerical work in addition to handling the material; and, like most prolonged worthy efforts, where it was opposed the strongest, it is now in the greatest favor.

Considering that there are several companies in the State which maintain offices in the business section of the city, with manufacturing and distributing departments operated some distance from the general office, an attempt will be made to outline a system of stores accounting applicable to a company so situated. The main requirement is that the accounting department include stores accounting at the main office.

Materials actually used in the manufacture of gas, such as coal, coke, oil and purifying material, will not be considered, as accounting for these is fairly well standardized. Each such stock consists of but one article, and that generally is used but for one purpose.

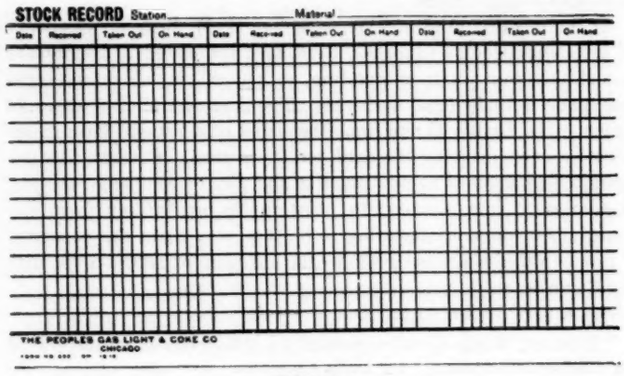
The stores we shall consider first are manufacturing station stores, consisting of all materials and supplies other than those used for the actual making of gas, or those used in improvements or additions to plant.

Distribution department stores cover material used in the distribution of gas from the holder to the burner, also the laying of mains and services, or any construction work affecting the distribution system. These stocks consist of iron pipe and fittings, brass and lead supplies, oils, blocking, etc., appliance stocks, both domestic and industrial, as well as their parts and accessories, paving materials, such as brick, granite blocks, sand, gravel, etc., for repairing or replacing pavement.

As the method of recording and accounting for these stocks is very similar, some companies may be able to combine some, or possibly all its stores. There may be stores, not mentioned thus far, such as merchandise, tools, implements, or stationery, for which the method of accounting will only vary in the distribution.

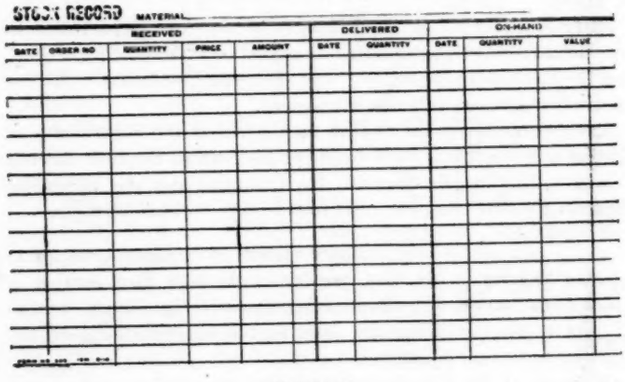
As the manufacturing and distribution divisions are at some distance from the accounting department, it is necessary to install two card records to have a perfect check on receipts and disbursements. The record at the store or stock room should show the date and the quantity of each article received, and the quantity disbursed. A card 8″ by 5″ (Form 1) should be kept for each article in stock.

The storekeeper makes a requisition for what is needed, has it appoved by the superintendent, and forwards it to the main office.


STOCK RECORD Station Material
Date Received Taken Out On Hand Date Received Taken Out On Hand Date Received Taken Out On Hand
THE PEOPLES GAS LIGHT & COKE CO
CHICAGO

FORM 1

When the order for the supplies is made out, a copy of it is sent the storekeeper, so that he may check the delivery and determine whether the order has been properly filled. He will then enter on stock record cards (Form 1) the articles received, quantity and date of receipt. The copy of the order is retained until the invoice is received, which is approved by acknowledging the material received as listed, checking with the quantity ordered. The storekeeper then files the copy of the order and sends the checked invoice to the department superintendent. After the latter has approved the invoice, it is forwarded to the accounting department. The storekeeper's record does not show the cost or value of the stock.


STOCK RECORD MATERIAL
RECEIVED DELIVERED ON-HAND
DATE ORDER NO QUANTITY PRICE AMOUNT DATE QUANTITY DATE QUANTITY VALUE

FORM 2

In the accounting department the invoice is turned over to the stores accounting clerk, who enters on his record card (Form 2) one card for each article in stock, the date of receipt, order number, quantity, price per item, and total cost. The name or number of the account to be charged is noted on the invoice, and it is then forwarded to the proper clerk to be prepared for payment. This completes the routine of accounting for material ordered and received.

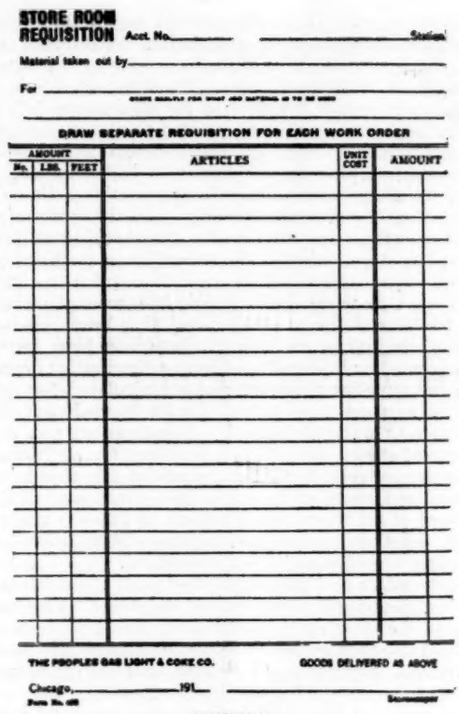
DISBURSING.

The methods followed in disbursing stores vary, depending upon the work to be taken care of. Consequently, it is best to treat separately each material used in each division.

The supplies comprising the stores of a manufacturing and holder station should be disbursed as follows:

First, it should be understood that the storekeeper and his assistants are responsible for the accounting of the stock under their control. Therefore, as protection to them, the materials in the store room should not be accessible to any one but them. Let it be also understood that bins, or a proper space should be provided for every class of article, and that the storeroom should be kept as neat and orderly as possible. This is absolutely essential to the success of the system.

All requests for material shall be made out on a requisition (Form 3) which should bear the signature of the foreman in charge of


STORE ROOM REQUISITION Acct. No. _____ _____ Station

Material taken out by _____

For _____

DRAW SEPARATE REQUISITION FOR EACH WORK ORDER

AMOUNT No.	AMOUNT LBS.	AMOUNT FEET	ARTICLES	UNIT COST	AMOUNT	

THE PEOPLES GAS LIGHT & COKE CO. GOODS DELIVERED AS ABOVE

Chicago, _____ 191__ _____

Storekeeper

FORM 3.

the work, or someone else in authority. The requisition should also give a concise and clear discription of the class or nature of the work for which the material is to be used. This is done in order that the accounting department may charge the value to the proper expense, or investment account. Requisitions should be numbered by the storekeeper, in consecutive order.

STORE ROOM DAILY REPORT

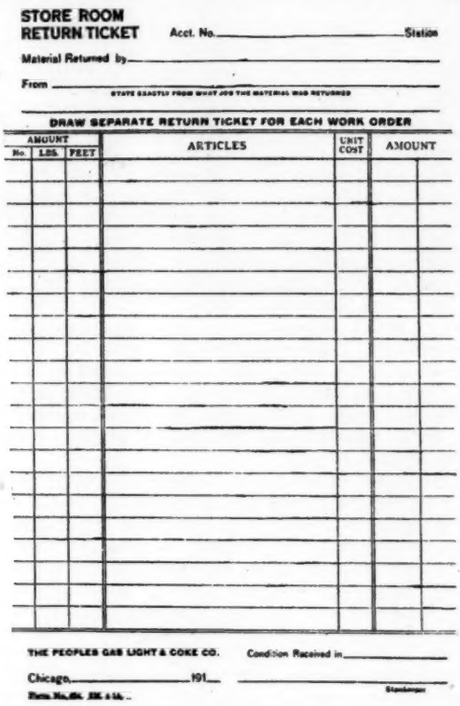
REQ. NO.	QUANTITY NO.	QUANTITY LBS.	QUANTITY FEET	ARTICLE	ACCT. NO.	DESCRIPTION OF WORK

THE PEOPLES GAS LIGHT & COKE CO _____ STOREKEEPER

CHICAGO: _____ 191 _____ SUPERINTENDENT

FORM 4.

These are two methods by which disbursements may be reported to the accounting department. Requisitions may be made in duplicate, one copy to be retained by the storekeeper and the other sent to the accounting department; or, the requisition may be retained by the storekeeper, and a daily report (Form 4) made out to cover all disbursements made; each entry to show the requisition number, the material given out and the quantity, a brief description of the work it is to be used upon, and the account number which should be charged. This report should be dated and signed by the storekeeper, and then approved by his superintendent and forwarded to accounting department. The latter method is the one recommended, as it is more easily handled by the storekeeper and does away with the necessity of making out requisitions in duplicate, which is a great inconvenience for most workmen. It also places the day's disbursements in front of the supertendent without making him thumb over a number of tickets; it is a better posting medium for the accounting department, since it is easier to recapitulate items from a sheet than from many tickets.


STORE ROOM RETURN TICKET Acct. No. _____ Station

Material Returned by _____

From _____

DRAW SEPARATE RETURN TICKET FOR EACH WORK ORDER

AMOUNT No.	AMOUNT LBS.	AMOUNT FEET	ARTICLES	UNIT COST	AMOUNT	

THE PEOPLES GAS LIGHT & COKE CO. Condition Received in _____

Chicago, _____ 191__ _____

Storekeeper

FORM 5.

All material taken by a workman and not used should be returned to the storekeeper, for which he will issue a credit requisition in duplicate (Form 5). This is to be numbered, and show the account number to be credited, description or class of work, name of material and quantity, and workman's name. The ticket must be approved by the foreman in charge, and forwarded to the accounting department; or, if a daily report is used and sent to accounting department, credit requisition should be entered after requisitions have been listed.

What has just been outlined covers the receiving and distribution of material at a manufacturing plant. No attempt is made to describe the details of handling the contents of a store room. But, the claim is made that the outline presented here will provide for the accurate accounting of manufacturing plant stores, provided it is given proper supervision and care, and that the storekeeper is a competent, practical man, of ordinary intelligence and judgment.

Distribution Department.

In outlining a system of accounting for the receipt of the stores of the distribution department or stores required in other branches, it is safe to say that the routine does not vary with the different departments. The method herein outlined will apply to all stores in all departments. But in disbursing material for the distribution division of the gas business it is necessary to provide a more extensive routine to insure proper accounting of stores and their uses. Here we have to do with the distribution of material over a wide area, and for a hundred or more uses, principally mains, services and meter work, construction, repairing, and overhauling, also the installation of stoves and lighting appliances, forms of what we term "Gratuitious Work," and miscellaneous operations, such as the making of tools, shop repairs, and maintenance, etc.

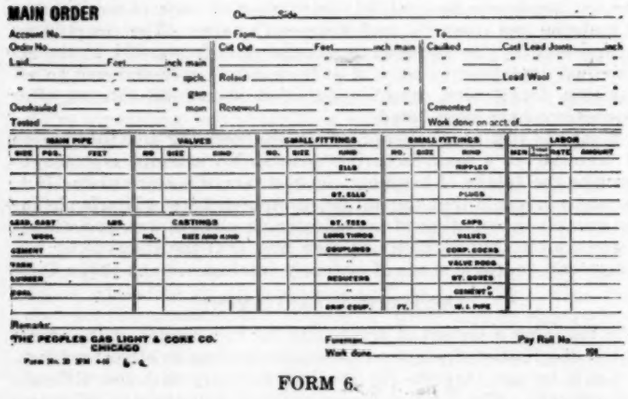
You will recall that the charge for material used at a manufacturing plant is noted on the workman's requisition, which answers as a work ticket; and that the unused material is returned to stores, listed on a credit requisition, and the account that had been charged when the material was ordered, credited. This cannot be done at a distribution shop for the reason that a fitter leaving the shop may have from five to twenty orders to execute, which may call for from five to ten classes of work. The same is true with a street gang. which may be engaged in main and service construction, as well as overhauling or repairing mains and services.

In accounting for material sent out from shop stores, and to provide for having all unused material or reclaimed material returned to stores, we meet one of the most interesting phases of stores accounting, and also one of the most unsatisfactory, if the routine is not strictly adhered to. No matter how painstaking the efforts in distributing, returning, charging, and crediting material, some differences and errors will occur. But, these differences can be held down. To entirely eliminate them would hardly warrant the expense. The chance for peculation is limited, and could only result to the advantage of the individual involved.

The fitter, street foreman, or any one authorized to draw material, makes out requisitions for whatever he wants for his immediate needs, or for delivery to locations specified. The storekeeper numbers these requisitions consecutively, lists the items of all requisitions filled, and from this recapitulation posts each day to his stock record cards. The requisitions and recapitulation should be filed in the storeroom as a check on disbursements, and should not be sent to the accounting department. This is contrary to the method employed in accounting for disbursements made at a manufacturing plant, and is a radical change.

The fitter or street foreman is given a "work ticket" for each job to be executed. The street foreman is given a "work order" for each location. The work order describes what he is to do, and may cover more than one class of work. It is from these executed work tickets and work orders that the stores accounting clerk credits his stores records, and charges the proper accounts with the material used.

After a fitter has completed a job he lists on the back of the work ticket the material used for that particular job. He has instructions to do this very carefully, and also to see that all material is picked up and placed in the wagon. In exceptional cases where material has been delivered prior to his arrival because of its bulk or weight, the fitter should write a "pick-up ticket" for any part that has not been used, giving the location, the articles and the quantity to be picked up. The ticket should be promptly turned in to the shop, so that the unused material may be picked up by a wagon as soon as possible. When material has been picked up, this ticket should be signed by the driver, checked by the storekeeper, and used to post to his store record the material brought back to stock from this source. Upon his return the fitter turns in all executed tickets to the shop, not to the storekeeper. These tickets are carefully inspected, and, if approved, forwarded to the main office.


MAIN ORDER

On Side

Account No.

From

To

Order No.

Cut Out

Caulked

Lead

Relaid

Lead Joints

Lead Wool

Overhauled

Renewed

Converted

Tested

Work done on sect. of

MAIN PIPE — SIZE, POS., FEET

VALVES — NO., SIZE, KIND

SMALL FITTINGS — NO., SIZE, KIND

SMALL FITTINGS — NO., SIZE, KIND

LABOR — MEN, HOURS, RATE, AMOUNT

BELLS, NIPPLES, BY. BELLS, PLUGS, BY. TEES, CAPS, LONG THROWS, VALVES, COUPLINGS, COMP. GOODS, REDUCERS, VALVE BOXES, BY. BOXES, CEMENT, SLIP COUP., W. I. PIPE

LEAD, CAST, LBS. — WOOL — CEMENT — YARN — LUMBER — COAL

CASTINGS — NO., SIZE AND KIND

Remarks:

THE PEOPLES GAS LIGHT & COKE CO. CHICAGO

Foreman

Pay Roll No.

Work done

FORM 6.

The street foreman reports the material used each day on main construction, overhauling and repairing of all descriptions on a form provided for that purpose. (Form 6.) This report is made daily, for the reason that main construction, and the overhauling and repairing of mains and services, as a rule cover an extended period; therefore, it would be unjust to hold the foreman responsible for recording all material used if it was not reported until the completion of a job; and further, discrepancies would then occur which would be impossible to locate. By reporting daily, a check can be maintained by the accounting department, if necessary, in addition to a check made by the gang timekeeper or some one selected by the foreman, as he is mainly responsible for any shortage in material, or noticeable inaccuracies in reporting what has been used.

Service installations are usually completed within the day, and the work order should show the material used. In case the work called for on the work order is not completed, a ticket showing the location and marked "Work Uncompleted" should be made out by the gang timekeeper. This ticket should be sent to the shop for its information, forwarded to accounting department, and held there until the completed work order is received. The latter should show all material used on the job. The foreman should see that pickup tickets are issued in duplicate for all material left over, or for salvage, and that one is forwarded to the storekeeper. A duplicate should be retained by the foreman as a check on the material to be brought in by the pickup or delivery man.

It will be necessary now to describe the routine followed by the stores accounting clerk, recapitulating material and supplies reported used or returned to stock; also the checking of his record with that of the storekeeper. The recording of material used and its cost has been described. A copy of all requisitions, describing the class of work to be done and giving the account number, or a daily report listing all requisitions filled, has been received from the manufacturing plant, and work tickets have been received for all orders executed or material used by the distribution department.

Material and supplies reported are recapitulated for each day, and posted on a monthly recapitulation sheet made out for every operation wherein material is used. Headings are put in for all regular items of stores, and space is provided for additional items.

A memorandum recapitulation is made of the tickets covering one operation, and checked to prove its correctness. This operation takes care of all fitters' work tickets, as there is a work ticket for each job, whether a meter set, appliance installation, arc lamp removal, or any one of many other operations.

Street work orders and manufacturing plant requisitions are recapitulated on memorandum sheets and checked. These sheets are then posted to the monthly recapitulation sheets of each account. At the close of the month the capitulation sheets are footed, the total of each item is priced and extended, and the extension posted to the credit of the record for each item of stores.

A monthly report is then made up, showing the total cost of all material chargeable to each account, and the total amount to be credited to each storeroom account. This report is sent to the bookkeeper to be posted to the general ledger.

One other operation included in the making of the above report, is the recapitulation of pickup tickets sent in by the storekeeper of the distribution department. All pickups executed are not sent in. It must be remembered that some material delivered by the storekeeper is not used, consequently such material, when brought in, affect the storeheepers record only. Tickets reporting the bringing in of material which had been in use and which can be reclaimed or used again, should be so noted. Such tickets should be forwarded to the stores accounting clerk, so that the operating or construction account affected may be credited with this salvage, and the stores account charged. The monthly recapitulation sheet should, of course, show this credit. However, it is only necessary to show the net figure on the report sent to the general bookkeeper.

The foregoing is a complete outline of the routine covering the receiving, distributing and accounting for, of material and supplies by both the storeroom and the accounting department. The system described for a manufacturing plant stores can be applied to any stores where the receipt, distribution and use of stock takes place under the one roof or plant. And the system described for a distribution division can be applied to any stock widely scattered before its use, and whose use cannot be determined at the time the requisition is made.

Checking Records.

The next step is to provide a simple routine to ascertain the condition of the stores and value of the records. By following the steps made in recording the receipts and disbursements by the manufacturing plant storekeeper and the stores accounting clerk, we know that if all entries are posted correctly the card records should balance at any date. At the close of the month the records should agree with the balance on the general books. If errors exist between the stores accounting clerk's record and the general ledger balance, it is easy for the clerk to locate the discrepancies by checking his report figures, and if necessary, by checking the purchases charged.

Tracing a difference between the records of the storekeeper and the accounting department requires more routine. The transactions, as noted on all storekeeper's records, excepting those of the distribution division, should agree in the aggregate in a month with those of the accounting department. A difference would require a check to determine the error, if the quantity is large enough to justify the search. Such a procedure does not require so much time as one would at first think. The great majority of the cards should balance unless there is extreme carelessness. But

where it is necessary to make a complete check of the card, it means a comparison of requisitions, or the checking of the daily reports with the storekeeper's copy of the requisition, also the checking of material received, card by card.

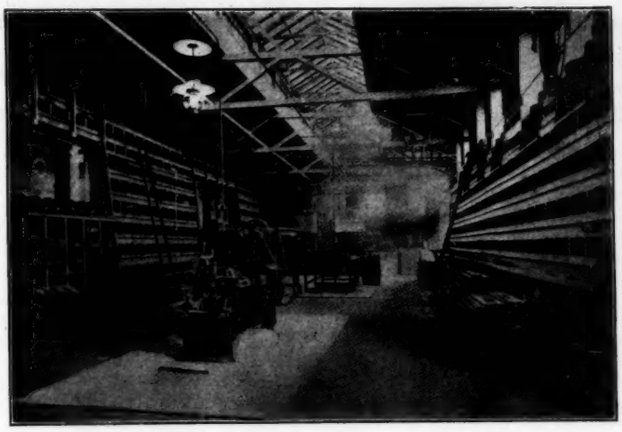
Probably the records of the storekeeper and the stores accounting department balance, and the stock does not. This is probable where there are a great many items in stock, although the difference should be small. In order to reduce this difference to a minimum, the storekeeper should maintain a check on the various items of stock with his stock record. In doing this, it is not necessary to check the entire stock with his cards at one time. He should check some items every day, and in that manner he can cover his entire stock at least four times a year. If this is done conscientiously, a great difference is unlikely. As a further precaution against discrepancies of either great or small proportions, it is within the province of the stores accounting clerk to make a personal check or inventory of any stock, if, in the opinion of his department head, such a course is necessary. One precaution, that prevents, to a considerable degree, the necessity of resorting to this extreme measure, is to have some one make a check of a few items of stock every time an opportunity presents itself, or time allows. This has a tendency to make a storekeeper realize his responsibility, and it invariably brings to light any carelessness that may exist.

The general structure of the system is now fairly complete. One important detail remains; that of accounting for the difference between the distribution division record of stores on hand and that shown on the record of the accounting department. This is due to the storekeeper crediting his stock with all material or supplies given out or delivered, and the accounting record being credited with only what was used. This leaves to be accounted for, what can be termed "Floating Stores or Stock," or the material delivered for street work, or to various jobs, and not yet used or installed.

Cooking and heating appliances, arc lamps, articles that are not convenient for a fitter to deliver, can be accounted for by checking over uncompleted or unexecuted work tickets, and also what has been sent out for delivery on the day the check is to be made. This can be done by checking the requisitions made on the storekeeper for that day's delivery. To make a complete check of material delivered for street work and not used, it is necessary to take an inventory of all material in the barrows of the street gangs, and of the cast and wrought iron pipe spread over different locations.

This completes in a general way the description of a system for stores accounting that can be installed and operated satisfactorily in any company, regardless of size. This plan is based on practical experience, and can be modified to fit the operations of a small company; or it can be extended to meet the needs of a large one. The modifications necessary to apply this system to a very small company would be, briefly, to maintain but one record; all recording to be done by the clerk, or individual who keeps the general records of the company. The actual handling of the stores to be confined to one individual, if possible, but not the one responsible for the record. The material and supplies used daily by a small company are comparatively few in quantity and it should be a simple detail, to maintain a perfect check between the storeroom and the record without using a great deal of time.

This system will be a success, regardless of the size of the company, if managed properly; if the records are maintained by intelligent and efficient clerks and storekeepers, and if workmen are cautioned to follow carefully their instructions covering the reporting of material used or picked up. There is no reason why the large differences that so commonly exist at the close of a fiscal year between the inventory and the ledger value, cannot be reduced to an unimportant amount.



A Model Distribution Department Storeroom for Small Pipe and Fittings.

New Methods and Appliances.

UNEQUAL DETERIORATION IN GRATES.—Usually the grates at the front of a boiler furnace deteriorate faster than those at the back. This condition is annoying, and results in higher cost of operation. The reason for this does not seem to be thoroughly understood, and even where the matter has been investigated opinions differ as to the exact cause.

The most plausible reason for more rapid deterioration of the front grates is the effect of the larger quantity of coal consumed on them per square foot of area, and the smaller quantity of air passing through the spaces, relative to the rate of combustion. When a fresh charge of coal is applied to a fire the air passing through the body of the fire is insufficient for complete combustion, and the auxiliary supply of air admitted above the grate is so limited that only the fuel at the back of the doors receives any benefit from it. The result is that the front of the fire reaches incandescence before any other part, with the possible exception of the narrow strips along the heated side walls. Air admitted above the fuel is not a factor in grate cooling, and the air entering through the ashpit doors is retarded to an appreciable extent by its direction of flow. It is, therefore, not difficult to imagine a strip of grate at the front of the furnace subjected to high temperatures, while the grate, 1 or 2 feet away, may be comparatively cool. That there is a steep temperature gradient through the fire seems to be indicated by common experience in many plants, and this is an explanation for the more rapid deterioration of the front than the back grates. To overcome this difficulty to some extent there are two remedies. One is to use bars of greater depth in the front, and in this way increase the cooling surface; the other to use bars having slightly closer air spaces for the rear grates.

While insufficient cooling surface is no doubt a chief cause of unequal deterioration of the grate bars, the trouble may be due to uneven firing. The air takes the path of least resistance, and a hole in a fire makes such a path. Holes burn in a fire unless it is carefully watched, and when they occur the fire should be leveled.

SILICA-GRAPHITE PAINT.—The protection of metal buildings in great factory neighborhoods is the most difficult problem for an owner and for the paint manufacturer. Not only are weather and wear to be provided against, but gases and alkali fumes destroy the paint and attack the metal. No paint resists all of these attacks as well as Silica-Graphite Paint, and we quote the following testimonial covering a 10 years' service of Dixon's Paint, received from a company in St. Marys, O.:

"We are pleased to advise that Dixon's Silica-Graphite Paint has been used by us for the past 15 years, and as long as the material continues the same as we have received in the past, there will be no other paint used on the iron work of our buildings,

"Ten years ago the question arose as to whether we would reside the interior of our building with new iron, as it was in very bad condition. The iron was worn through in many places, caused by the alkalies and gases in this vicinity. Upon the writer's suggestion we secured several barrels of Dixon's Paint and coated the building. A close inspection after 10 years' service in this trying climate reveals the fact that the iron to-day is in better condition than it was 10 years ago, before it had been coated with your paint."

Items of Interest from Various Localities.

COMPETITION for the lighting of the Scranton, Pa., courthouse square, has resulted in a ten year contract with the Hyde Park Gas Company to furnish the illumination at 12¼ cents per standard per night. The Scranton Electric Company is to light the interior of the courthouse and the county prison, contracts for five years for the jail and ten years for the courthouse being awarded them.

A TAX on receipts of gas and electric companies that had been imposed by a Portland, Ore., ordinance, has been declared void by the Oregon Supreme Court. Justice Harris, in his opinion, pointed out that the ordinance could not be upheld as a tax on property, because the city cannot levy a property tax for general purposes except on the property and as pointed out by the general law.

IN the Citizens Preparedness Parade, in New York City, on Saturday last, division 25, comprising representatives of the lighting trades, was led by Mr. Louis B. Gawtry, vice-president of the Consolidated Gas Company.

MONDAY, February 14th, was the day of largest gas output in the history of the Consolidated Gas, Electric Light and Power Co., Baltimore, Md., the send-out for that day having been 16,127,000 cubic feet. The sales of gas for February, under the company's new industrial schedule, increased 57%, as compared with February of 1915.

FREMONT, Neb., has been enjoined from any attempt to enforce the recently passed ordinance for the reduction of 15 cents per 1,000 feet in the price of gas; and the courts will adjudicate the merits of the reduction. The ordinance was passed by the outgoing council, and was generally considered to be spite work, because of the activity of General Manager W. H. Merritt, of the Fremont Gas, Electric Light and Power Company, in exposing conditions at the municipal electric plant.

S. E. DEFRESE, General Manager of the Chattanooga (Tenn.) Gas Company, who was granted a 20-year franchise by the board of aldermen of Cleveland, Tenn., has forfeited his franchise, it is claimed, because actual work on the construction of the gas plant was not started within 6 months after awarding the franchise.

COMPULSORY extraction of benzol from all coal gas in Italy has been ordered by the government. Works making more than 35,000,000 cubic feet of gas must put in the necessary apparatus at their own expense; those making less will receive a subsidy of $1.95 per 350,000 cubic feet of gas made. The benzol, toluol and xylol to be extracted is limited to 15 to 20 ounces per 1,000 cubic feet, or as much as will not reduce the heating value below 517 B.T.U., or the candle power value more than one-third. The benzol produced must be 55%, with a tolerance of 5.5% either way; payment will be on a 55% basis. Plants unable to distill their own oil may have it done for them. The munitions department may advance one-third of the necessary capital, which will be set off against the price of the oil supplied. All works distilling coal, whether gas works or not, must report the quantity of tar they make and all tar-distilling plants must report to the authorities.

THE Public Lighting Committee of the Massachusetts Legislature has reported adversely on the bill, recommended by the Gas and Electric Light Commission, to the effect that the sliding scale of prices in Boston be abolished, unless the Boston Consolidated Gas Company is divorced from the Massachusetts Gas Companies. The committee advocates reference to the next General Court. Under the existing law, the sliding scale rates may be revised after July 1, on the petition of the Mayor of Boston.

C. R. HODGSON has been appointed division manager of the Philadelphia Suburban Gas and Electric Company, West Chester, Pa., succeeding R. P. McConnell, who has been made manager of the St. Clair Gas and Electric Company at Belleville, Ill. Mr. Hodgson was formerly local manages of the Northern New York Utilities, Inc., at Carthage, N. Y.

The "Vulcan" gas iron, made by the Wm. M. Crane Company, has been the subject of strenuous litigation, and just been declared by the U. S. Circuit Court of Appeals not to be an infringement of patent No. 948,773 of the Strause Gas Iron Company.

The new gas rates in Ottawa, Canada, are: Gross rate—$1.10 per 1000 cubic feet for first 40,000 cubic feet in one month; next 25,000, $1.05; next 15,000, $1.00; next 100,000, 95c.; excess, 90c. Service charge, 18 cents per month. Discount, if paid within fifteen days of date of bill, 10%. Minimum monthly charge, including service charge, in any month during which gas is used, 60 cents for a 10 light or smaller meter. For larger installations the monthly service charge will be:

Where a 20 light meter is required	$0.30
Where a 30 light meter is required	.36
Where a 50 light meter is required	.50
Where a 60 light meter is required	.60
Where a 80 light meter is required	.80
Where a 100 light meter is required	1.00
Where a 200 light meter is required	1.20
Where a 300 light meter is required	1.50

Prepayment meters will be adjusted to give 204 cubic feet of gas for 25 cents, with no meter rental or service charge.

THE directors and officers were re-elected at the annual meeting of the Madison (Wis.) Gas and Electric Company. They are John Corscot, John Grinde, A. E. Proudfit, C. F. Cooley, F. L. Cross, A. P. Lathrop and F. W. Hoyt, directors; A. P. Lathrop, president; John Corscot, vice-president; F. L. Cross, vice-president and general manager; John St. John, secretary and treasurer.—Our item of May 1st was from an un-sensored clipping.

THE public service companies of Augusta, Ga., were heavy losers by the fire on March 22, which destroyed $5,000,000 of property in 30 city blocks. The Augusta-Aiken Railway and Electric Corporation suffered the heaviest loss of the utilities, amounting to around $31,000. It's number of customers disconnected totaled 440. The gas light company lost its office and all its records through failure of the vault to protect, and a large number of meters in the district were destroyed. The loss of the Southern Bell Telephone and Telegraph Company was about 700 telephone installations, representing about $12,000. The Western Union Telegraph Company lost their entire office equipment.

THE Beaumont (Tex.) Gas Light Company has let a contract for additional holder capacity, bringing it up to 100,000 cubic feet, in anticipation of an increase in the volume of business next winter. The offices of the company will be removed to new quarters Aug. 1, it having leased the first floor of the new W. W. Kyle building, at Pearl and Broadway.

THE board of estimates of Baltimore, Md., has before it the offer of the Columbia Gas and Electric Company to distribute natural gas in Baltimore on a sliding scale ranging from 50 cents to 35 cents per 1,000 cubic feet for domestic use. This offer is a part of the consideration for a franchise, in which there is also proposed a franchise tax of 4% on the gross receipts from the sale of gas. A 25-year franchise is asked.

GEORGE W. BROTHERS, for many years treasurer of the Lowell (Mass.) Gas Light Company, died May 5th, at the age of 69. He was a member of William North lodge of Masons, Horeb royal arch chapter, Ahasuerus commandery, K. T., and the Massachusetts consistory. He was also a member of the Odd Fellows and the First Universalist Church. He leaves a widow and two sons.

THE Rogasco Association of the Rockford (Ills.) Gas Light and Coke Company, were hosts at a moving picture entertainment to members of associations from factories in the city. An hour and a half of moving pictures, followed by light refreshments, filled out a social evening. The pictures were both entertaining and in-

structive, consisting of a romance, comedy, travel picture, and two reels of "Safety First" taken under the auspices of the American Gas Institute.

THE Grand Rapids (Mich.) Gas Light Company has organized a safety first committee among its employees representing all departments, to discuss the local application of safety principles.

THE American Coal Refining Company of Pittsburgh, Pa., plans to erect a plant near Warsaw, Mo., to produce 5,000,000 cubic feet of gas a day from Missouri coal.

CHARLES E. SMITH, formerly with the Knoxville Gas Company, has taken charge of the sales department of the Washington County Gas Company, Johnson City, Tenn.

WALDO C. BILLS, who resigned as superintendent at the plant of the Portland (Me.) Gas Light Company, and will shortly return to his former home, Malden, Mass., was given a farewell dinner by the officers of the company, a large number of employees being present. During the evening Mr. Bills was given a charm in the form of an elk's tooth, the presentation speech being made by Mayor Charles E. West, of South Portland, who is treasurer of the company.

DOLLAR gas and ten-cent electricity were announced May 1st by the Stamford (Ct.) Gas and Electric Company. The reduction, like others made by the company in recent years, is voluntary.

HENRY K. MORRISON, general manager of the Brockton (Mass.) Gas Light Company and of the Lynn Gas and Electric Company, has been relieved of his official duties in Brockton, and will devote all his time to the Lynn company. George H. Priest, who has been connected with Stone & Webster, becomes manager at Brockton.

THE Alameda County Division employees of the Pacific Gas and Electric Company had their second annual dinner in Oakland, Cal., on April 27th. Manager Leach was toastmaster and presided over a representative gathering of nearly 300 Pacific Gas and Electric Company's workers from Oakland, Berkeley, Alameda, Hayward, San Leandro, Richmond, Niles, Livermore, Pleasanton and other county centers. A program of twenty-two numbers entertained the company until a late hour, one of the attractive features being the selections of an orchestra of employees conducted by A. B. Weeks, Jr. Addresses, vocal solos, instrumental music and moving pictures were on the program. The speakers included John A. Britton, general manager; F. A. Leach, Jr., and Fred. S. Myrtle.

THE directorate of the Waterbury (Conn.) Gas Light Company has been changed by Messrs. R. F. Griggs, H. S. Chase and E. O. Goss, all local men, succeeding B. I. Spock, J. M. Tomlinson and J. S. Hemingway, who represented the New Haven Railroad interests. The other local members of the board are J. P. Elton, E. S. Williams, O. S. Northrup and Harris Whittemore. No changes were made in the officers, and E. G. Buckland, who is a vice-president of the New York, New Haven and Hartford Railroad Company, remains as President of the gas light company.

WALTON CLARK, JR., son of Vice-President Clark of the United Gas Improvement Company, is the moving spirit in raising a company among employees of the U. G. I. in Philadelphia to join the Second Regiment Infantry, National Guard of Pennsylvania.

C. T. LEWIS, assistant superintendent at the plant of the Fall River (Mass.) Gas Works Company has been appointed superintendent of the Pawtucket (R. I.) works of the Blackstone Valley Gas & Electric Company, and is to assume his duties May 15. Last week he was agreeably surprised by his associates when he was presented with a handsome traveling bag, meerschaum pipe and tobacco stand. The presentation was made by Supt. R. B. Clark who extended to Mr. Lewis the best wishes of all for success and happiness in his new position.

Utilities Commission News.

WHAT IS A MUNICIPALITY?—The Board of Public Utility Commissioners of New Jersey has handed down a decision on the meaning of "municipality" in connection with county operations; denying approval of a franchise granted the New York Telephone Company by the Middlesex County Board of Freeholders, on the ground that the limited franchise act of 1906 had not been considered. The board points out that in granting the franchise the freeholders failed to follow the procedure laid down in the limited franchise act requiring a public hearing as a preliminary to the granting of such a franchise. The telephone company contended that the word "municipality" in the act did not mean or include "county," and therefore compliance with the provisions was not required. In its ruling the board says:

"An examination of the authorities shows that whether or not the word 'municipality' as used in a given statute means 'county' depends upon the legislative intent as expressed in the title and provisions of the statute itself. In some instances the word 'municipality' has been held not to mean 'county,' and in others to mean 'county.' A careful study of the limited franchise act convinces this board that the Legislature in using the word 'municipality' intended to include 'county,' and, therefore, the telephone company in obtaining the municipal consent here submitted for approval is required to comply with the provisions of the limited franchise act. As the company did not so comply with the act, the approval of the resolution is withheld."

CAN'T PREVENT SALES OUTSIDE ITS JURISDICTION.—That it is not a matter over which the Public Utility Commissioners of the District of Columbia has jurisdiction, is the answer sent by the Commissioners to Congress, in reponse to the Cary resolution, directing them to report by what authority the local gas light companies are furnishing gas to consumers in Maryland.

The Comissioners say, that upon investigation, they find that the acts of Congress dealing with the District companies, have not authorized the corporations to furnish gas outside the District, nor is it prohibited. They are informed that gas is furnished to consumers in Maryland, just beyond the District line, by the Washington Gas Light Company and by the Georgetown Gas Light Company, of Montgomery county, both of which are Maryland corporations. These companies purchase gas from the corresponding corporations of the District.

PUBLIC SENTIMENT FAVORS REGULATION.—A special committee of the Illinois Legislature has been investigating the feeling for and against home rule of Chicago utility companies. The committee held hearings at East St. Louis, Danville, Peoria, Ottawa and other points, at which the views of local citizens were given.

In summing up the sentiment at the hearings, Medill McCormick, of Chicago, said: "Our committee will draft several amendments to the present utilities law, and I am hopeful one of them will give a large degree of self-government to Chicago.

"There has been no evidence of any desire for the abolition of the State Commission, or for a return to home rule in communities that we have visited. This is shown by testimony of persons appearing before the Commission, and by the absence of persons from any distance outside the cities in which we held hearings. They would doubtless have come before us had they been dissatisfied. There is some complaint that the Commission is slow, and there is a demand for occasional hearings in other cities than Springfield and Chicago."

COMMISSION HAS LEGISLATIVE POWER.—The Supreme Court of Appeals of West Virginia, in affirming the circuit court of Monongalia county in the cause of the Handal Gas Company against the Star Glass Company, says that "in the exercise of the power and authority to change unjust or unreasonable intra-state rates, charges and tolls, so as to make them just and reasonable, notice to the patrons of the Public Service Company to be affected by the order, of the intention of the commission to make such alteration, is not required by statute.

"The power of the commission to alter rates for public service is delegated legislative power and the procedure in the exercise thereof is also legislative in character."

Financial Notes.

AMERICAN POWER AND LIGHT COMPANY, with the proceeds from the sale of gold debenture bonds, 6% issue, recently offered to its stockholders, has anticipated payment of the $3,000,000 one-year 6% notes, due July 13, 1916, and has liquidated all other floating indebtedness. The proceeds from the sale of additional bonds will be used for working capital. As of March 31, 1916, the company has total current assets of $1,841,113 (of which $288,212 was cash) and current liabilities of only $193,930.

THE report for March shows net earnings of the Massachusetts gas companies $159,741, as compared with $137,122 in March, 1915, and net earnings of the coal companies $136,353, as compared with $121,065; making total net earnings $296,094, an increase of $37,907. For the nine months to March 31 the net earnings of the gas companies were $1,238,539, as compared with $1,215,414; and the net earnings of the coal companies were $817,030, as compared with $735,849, making total net earnings $2,055,570, an increase of $104,306. In addition to these earnings Massachusetts Gas has a large equity in the profits of other companies, particularly the New England Manufacturing Company, which is producing war chemicals.

BROOKLYN UNION GAS reports for 1915 gross earnings $10,719,758, a decrease of $11,054; net earnings $2,556,378, an increase of $429,190; balance for dividends $1,717,059, an increase of $421,768; surplus after dlvidends $277,059, as against a deficit of $144,539. Profit and loss surplus December 31, 1915, was $6,049,207. Three years tabulated show:

	1915.	1914.	1913.
Op. revenue	10,719,758	10,730,812	10,218,514
Net after taxes.	2,234,212	1,918,896	1,596,446
Other income	232,167	203,292	205,073
Total income	2,556,378	2,127,189	1,801,520
Int. and rent	839,319	831,806	825,558
Net income	1,717,059	1,295,381	975,962
Dividends	1,440,000	1,439,920	1,439,920
Surplus	277,059	*144,539	*463,958
Prev. surplus	5,942,578	5,981,293	6,294,344
Misc. debits	170,430	†105,823	†150,907
P. & L. surplus.	6,049,207	5,942,578	5,981,293

*Deficit. †Credit.

Total sales of gas for 1915, 14,087,779 M. cubic feet; 1914, 14,102,733 M. cubic feet; 1913, 13,443,085 M. cubic feet.

AMERICAN CITIES COMPANY (United Gas and Electric Corporation subsidiary) reports for March:

	1916	1915	Increase
Gross	$1,292,618	$1,144,297	$148,321
Net after taxes	497,736	423,681	74,055
Interest charges	312,899	299,117	13,782
Preferred dividends	73,271	73,271	.....
Surplus	111,567	51,293	60,274
3 months' gross	3,817,184	3,535,256	281,928
Net after taxes	1,505,483	1,379,219	126,264
Interest charges	941,854	897,622	44,232
Preferred dividends	219,937	219,937	.....
Surplus	343,691	261,659	82,032

UNITED GAS AND ELECTRIC CORPORATION combined earnings of all subsidiaries, except American Cities Company, for March shows:

	1916	1915	Increase
Gross	$1,248,848	$1,091,754	$157,094
Net after taxes	528,335	442,039	86,296
Interest charges	249,529	238,685	10,844
Preferred dividends	31,145	31,145	.....
Surplus	247,660	172,207	75,453
3 months gross	3,737,279	3,325,422	411,857
Net after taxes	1,633,417	1,372,399	261,018
Interest charges	749,792	731,749	18,043
Preferred dividends	93,437	93,437	.....
Surplus	790,187	547,212	242,975
12 months' gross	13,976,416	13,201,991	774,425
Net after taxes	6,221,080	5,544,213	677,867
Interest charges	2,935,396	2,832,317	103,079
Preferred dividends	373,750	355,121	18,629
Surplus	2,911,934	2,356,774	555,160

THE LINDSAY LIGHT COMPANY'S directors recently declared a dividend of 3% on the common stock, payable May 31 to stockholders of record May 15. This compares with the last dividend of 2%. The dividend is not a regular quarterly dividend, the directors at each meeting for dividend purposes determining the disbursement. The usual quarterly dividend of 1¾% on the preferred stock was also declared.

THE LINCOLN (Neb.) GAS AND ELECTRIC LIGHT COMPANY has applied to the State Railway Commission for leave to issue $733,000 of first mortgage 5% 40-year gold bonds, to secure funds to retire or pay off 6% secured coupon gold notes issued by consent of the commission July 11, 1914. The company has an offer for the proposed bonds, and is desirous of selling them and redeeming the notes while the present market is available. The company reports it has paid no dividends since the order of the commission in 1914, and that earnings in excess of operating expenses have been invested for betterments and extensions. In addition to the notes to be redemed, the company owes $100,000 floating short-term indebtedness. The company has been unable to sell preferred stock, a right given it by the railway commission in 1914, and needs the proposed bonds to refund its notes, also for bills payable and for the acquisition of property and extensions and betterments of its facilities.

Current Prices of Public Utility Securities.

	Bid.	Asked.
American Gas Co	120	122
*American Gas & Electric	147	150
*American Gas & Electric pf	49	51
American Light & Traction	374	378
American Light & Traction pf	111	113½
American Power & Light	64	66
American Power & Light pf	85	86½
American Public Utilities	45	47
American Public Utilities pf	76	79
Associated Gas & Electric pf	55	65
Atlantic P. & L. pf	92½	95
Brooklyn Union Gas Co	..	..
Cities Service	135	187
Cities Service pf	84	85
Colorada Power	25½	26½
Colorado Power pf	100	101½
*Commonwealth Pr., Ry. & Lt	64	65
*Commonwealth Pr., Ry. & Lt. pf	84	86
Consolidated Gas Co	134	...
Denver Gas & Electric gen. 5s	97	99
Electric Bond Deposit pf	78	82
Electric Bond & Share pf	99½	100
Federal Light & Traction	12	14
Federal Light & Traction pf	46	49
Gas & Electric Securities	180	195
Gas & Electric Securities pf	90	95
Northern States Power	60½	61½
Northern States Power pf	96½	97½
Pacific Gas & Electric	58½	59
Pacific Gas & Electric, original	90	92
Pacific Gas & Electric 1st pf	91	93
Public Service	129	130
Republic Ry. & Light Co	27	29
Republic Ry. & Light Co. pf	72	75
Southern California Edison	88½	90½
Southern California Edison pf	103	105
*Standard Gas & Electric	12	12½
*Standard Gas & Electric pf	37	37½
Tennessee Ry., Light & Power	11	12
Tennessee Ry., Light & Power pf	51	53
Toledo Trac., Light & Power	32	35
Toledo Trac., Light & Power pf	63	66
*United Gas Improvement Co	87	88
United Light & Railways	52	54
United Light & Railways 1st pf	77	78
Western Power	16	17
Western Power pf	60	62

*Par value $50